June 1972

Smithsonian

Ling-Ling, one of the new pandas at National Zoo, paws at her bamboo plant (p. 26)

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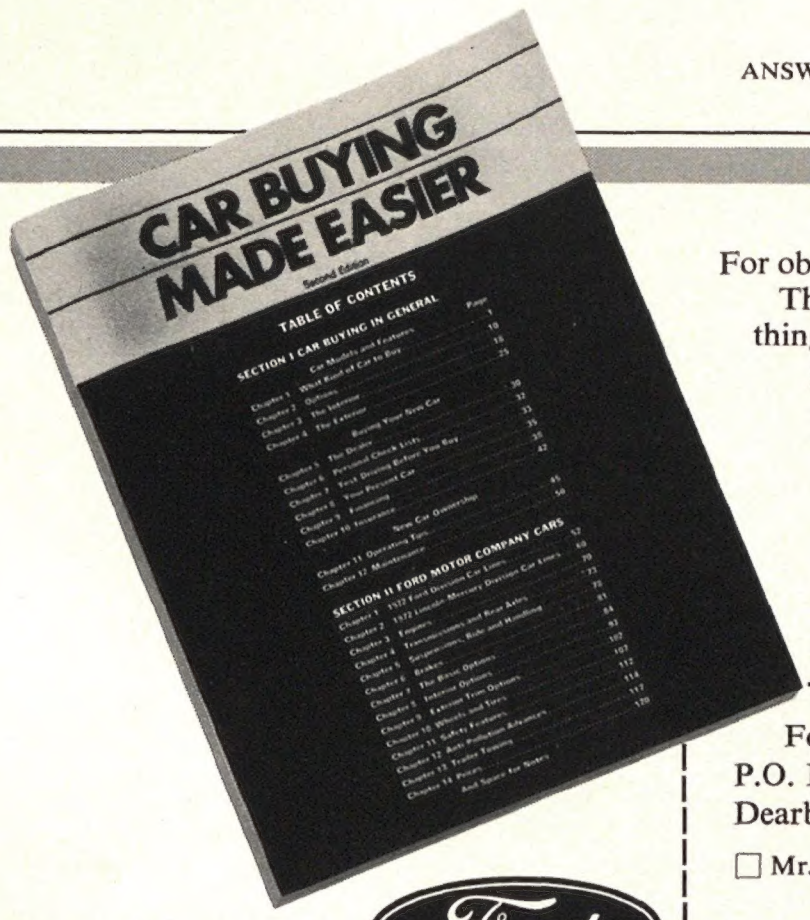
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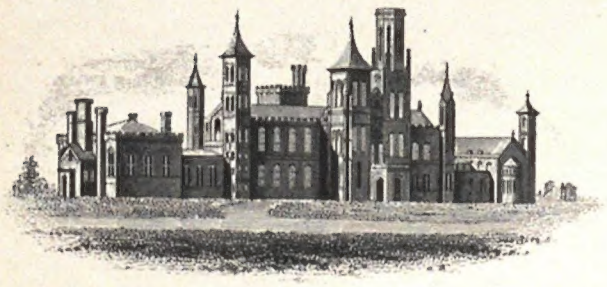
Secretary Ripley's comments

The view from the castle



Too much growth is proving a nightmare for universities and institutional museums as well as the population of the world

The Smithsonian, along with its Woodrow Wilson International Center for Scholars, has recently played host to a symposium on population growth. The proposition was offered that an endless rise in the rate of human population, and in the rates of production, consumption and pollution consequent upon such growth, is a phenomenon that requires surveillance. Presumably, depending upon adequate world planning, we will need some system of control (see April SMITHSONIAN).

Recently a fascinating article about the consequences of growth among educational institutions appeared in *Science* (January 28, 1972). Indeed the rates of growth among universities have turned for many of us from a good thing into a nightmare. Where a respected university administrator could coin the term "megauniversity" and be proud of such a giant force for education two decades ago, now universities have learned that bigger is *not* necessarily better.

Unfortunately, most administrators consult economists, engineering planners and other purveyors of soft science rather than either physicists or biologists. The physicists could tell them something of the problems of scale and variable functions, the biologists something of the problems of cell growth, homeostatic mechanisms and the dangers of hypertrophy. Thus, as the article points out, "the weight of an organism is proportional to its volume or mean diameter cubed." A large animal such as an elephant (whose individual cells by the way are no larger than those of a mouse for the most part) cannot really increase its size very much because its weight would require legs so bulky the animal would probably be immobile.

And so, the article continues, the eventual sprawling campus of the megauniversity of 25,000 or more students creates diffusion, monotony, lack of community, administrative complexity and bureaucracy. The pursuit of intellect flies out the window and "craft idiocy" becomes the norm. Finally alienation appears and, as the Scranton Commission Report noted (1970), campus disruptions and unrest are prevalent in the larger university.

Museums, slow to be affected by the irruptions of their sister institutions, should take note. The ruckus in New York about the Metropolitan Museum's plans for expansion can be seen to have a certain relation to the problems of the megauniversity. Exhibits are subject to sprawl just as are campuses, giving rise to problems of fatigue, impersonality and anomie.

Museum directors now speak of "house museums," small ones, with unconcealed yearning. A small museum, given today's technology, can use a variety of exhibit techniques to create a sense of diversity, as well as interest, in a small area. The combination of a very few objects, skillfully chosen, and audio-visual teaching aids can get home the message as effectively in a small environment as in a large one.

At Fort Worth, Texas, there are at least four or five smaller museums and galleries, each eclectic and stylish in its own way. How much better than one vast, all-embracing collection. Great institutional museums would be wise to think about the dangers of too much growth and set for themselves a plan for limiting it.

S. Dillon Ripley

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Letters to the Editor

Toxic metals

Dear Sir: In the article, "The toxic metals in your future—and your past," Dr. Dale Jenkins gave a most enlightening appraisal of the little we know about these ecological hazards, many of which have been with us or in our environment since the dawn of history.

As another optimistic viewer of the future of Mankind, it may be worthwhile to reemphasize that many of the experimental lesions caused by metals only occur with some of their salts, which are seldom found in nature, but are often man-made.

Conflicting claims and limited evidence of similarities on susceptibility of humans to specific metallic substances with those of laboratory animals do not allow for final conclusions now.

One point seems, however, quite clear: Man himself is the most serious ecological threat to planet Earth.

Abel L. Robertson jr., M.D.
Shaker Heights, Ohio

Dear Sir: The world's driest martini, as described in the toxic metal article, would not be dry enough for some of my friends. The one ounce of vermouth would have to be put in 7,812½ gallons of gin. I am sure the one ounce in 7,800 gallons would send them into a fit.

Kieran Martin
Broad Channel, New York

Dear Sir: I look at the environmental protection field through the eyes of a chemist. Presently, my chemical background is being used to relate experimental archaeological techniques to obtain a fuller historical understanding of some pollution problems associated with fossil fuels. Your comments on lead were especially interesting, since I am making a literature survey covering research in lead accumulation in plants.

Peter J. Slota jr.
Archaeological Research Unit
University of California
Riverside, California

Dear Sir: I think almost every sentence of the article on toxic metals which is devoted to lead is slanted and misleading.

The foremost example is the recently published study by the National Academy of Sciences on "Airborne Lead in Perspective." Contrary to all the implications of the SMITHSONIAN article, the National Academy pointed out in the preface that "lead attributable to emission and dispersion into general ambient air has no known harmful effects." Even if a science writer disagrees with such a finding, as a spokesman for science he would seem obliged not to ignore it.

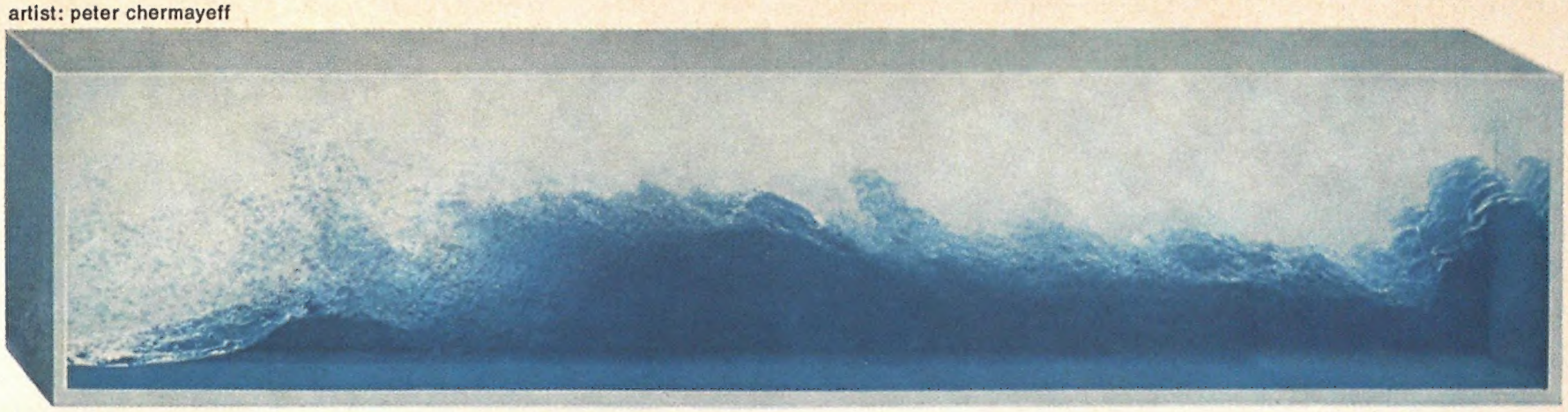
He then proceeds to show in a dramatic graph the trends of lead in glaciers and plants. Obviously, the most spectacular and menacing line on the graph is the top blue one, continuing across the page, purporting to be the lead in Greenland glaciers. But the text beneath the chart explains that the lines are not to the same scale, are not in parts per million but are in measurements from parts per million all the way down to (in the case of Greenland glaciers) parts per trillion. The author doesn't quote wide variations found in Greenland experiments.

I have learned from bitter experience, in connection with the current lead-in-gasoline controversy, that it is futile to try to get anyone to qualify any story that has ever been set in type.

Lawrence E. Blanchard jr.
Executive Vice President
Ethyl Corporation
Richmond, Virginia

While Mr. Blanchard applauds the Academy report and extracts a statement from the preface, his use of derogatory adjectives applies equally to the Academy report and to Dr. Jenkins' article since both used identical sources and data on levels of lead in Greenland glaciers, Antarctic glaciers, levels of lead in seawater and in Swedish mosses. Both quoted the original authors with regard to sources of lead. In its general summary, the Acad-

artist: peter chermayeff



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emy report states: "It is also clear that one major source of general environmental contamination is the combustion and dispersal of lead alkyl compounds used as automotive fuel additives. . . . Today, about 98 percent of the airborne lead that can be traced to its source comes from combustion of gasoline." Ed.

Highways

Dear Sir: As chairman of the Transportation Committee of the Federal City Council, I was dismayed to find your article on the Washington highway system so strongly biased and misinformed.

You state that "ECTC has used almost every tactic in the book short of violence, which it disavows." Anyone who has ever attended public hearings on the proposed freeways can attest to the violence. At one hearing in 1969, the police had to be called to restore order.

The recommended mileage, as of December 1971, for the North Central segment is 3.1 miles, not 8.85 miles that you used. It would require the removal of only 48 housing units, not the dispersal of thousands of people as you claimed. The article leaves the impression that the vast majority of the citizens of Washington are opposed to all freeways, but an Oliver Quayle poll and a City Council poll in 1969 found the great majority were in favor of the proposed freeway.

To present such an article as if it were the whole story of a complex and controversial issue is appalling.

Miles L. Colean
Washington, D.C.

The article did present the other side. The many proponents of the freeway "included Congress . . . a blue ribbon civic organization, the Federal City Council, and various governmental and civic bodies in the suburbs. At one time or another, these were joined by the President of the United States, the mayor and city council of Washington. . . ."

As far as violence goes, the author makes clear that they were disruptive, but not physically violent. Taking to the streets is not necessarily violent, as has been shown by a great many mass protests that the police themselves refer to as peaceful. The 8.85-mile North Central Freeway includes the extension into Maryland as it was originally proposed in 1965; it has already taken 69 houses, so the figure of 48 is obviously incorrect. The

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Quayle poll and one ordered by Commissioner Hahn are believed to have been based on very small samples, with such questions as: "Would you support a compromise to build the Three Sisters Bridge and/or the North Central Freeway in order to release subway funds?" Ed.

Dear Sir: The Washington metropolitan area owes a tremendous debt to the courageous leaders of the Emergency Committee on the Transportation Crisis (ECTC) who are trying to save us from the unlimited depredations of the greedy highway lobby.

I have lived in the area since 1918 and have seen the disastrous results of pollution (I remember when we could swim in the Potomac) and antiquated public transportation (I can remember trolley car fares of six for 25 cents) and the subsequent proliferation of automobiles that now choke the entire city.
Clarence Darrow Gurewitz
Silver Spring, Maryland

Superbean

Dear Sir: At International Basic Economy Corporation, we were quite fascinated by the article, "It's a sperm whale, it's superbean!" Since we are in the business of helping the economies of developing nations, we are interested in the potential of the jojoba bean. If it could, as your article points out, become an important cash crop, it could trigger tremendous possibilities for a lot of people.
Vita Toros
New York City

Dear Sir: It is almost unbelievable what your article has done in sparking interest for the development of our jojoba project. More important, however, is the fact that the article brought us into contact with some of the major users of sperm oil who have indicated a strong interest in the potential of jojoba oil as a substitute for the diminishing supply of sperm oil.
William P. Miller
Chief, Development Branch
Indian Division
Office of Economic Opportunity
Washington, D.C.

Dear Sir: We at Sun Oil Company have also been working on the problem of a synthetic sperm whale oil substitute, and we have come up with one that is both

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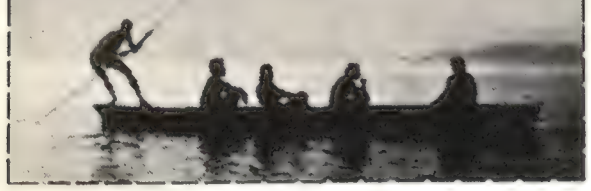

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I thought you might be interested to know that more help for whales is on the way.

Robert M. Kennedy
Director, Applied Research
Sun Research and Development Co.
Marcus Hook, Pennsylvania

Desert flowers

Dear Sir: In your article, "The improbable wild gardens of our deserts," your beautiful photograph of the strawberry hedgehog cactus, *Echinocereus engelmannii*, was incorrectly identified as *Opuntia echinocarpa*. The fruits of the strawberry cactus shed their spines when ripe and are delicious.

Arthur B. Wells
Affiliate director of the Philadelphia Cactus and Succulent Society
Bryn Athyn, Pennsylvania
Mr. Wells is correct. Ed.

Presidential style

Dear Sir: Your statement that "John Kennedy [was] the youngest of all men elected to the office" is in error. Theodore Roosevelt, inaugurated at 42, was the youngest President of the United States. Kennedy was 43.

Ross G. Hoffman
Baltimore, Maryland
Roosevelt was the youngest President to be inaugurated—*not the youngest to be* elected. *After the assassination of President McKinley in 1901, Vice President Roosevelt was inaugurated President.* Ed.

Snow bales

Dear Sir: Snow rollers develop on open surfaces under conditions of moderately strong winds and a moist cohesive snow surface. The wind disturbs the surface and some of these small clusters of crystals are then blown along the surface; as they travel they roll up snow just as one would roll up a snow cylinder. Sometimes the core, which is the least com-

pressed due to its own weight, falls out leaving a hole. The surface and subsurface conditions, apparently, are critical, which makes the rollers a relatively rare phenomena. I have no idea of the trona mineral deposit, but it certainly is not a prerequisite to their formation.
John H. Conover
Research meteorologist
Dedham, Massachusetts
Other readers have written of seeing snow bales in Indiana, upstate New York and Alaska. Ed.

Symbols

Dear Sir: In your article, "Symbols speak their own language," you stated that they hurdle the language barrier. This is only partly true. For example, the symbol you used for "hot" was a blacked-in thermometer, and the sign for "cold" was a thermometer with latitudinal lines on it. While these are understandable to a 20th-century man, how about the 783 million illiterates in the world? I imagine there are some who have never heard of a thermometer.
Stuart Meacham
New York City
SMITHSONIAN *considers all of its readers literate. The hot thermometer symbol is colored red and the cold one is blue (not apparent in the black-and-white reproductions). Author Henry Dreyfuss says that many of the symbols used are currently in use, but the book was also an attempt to offer symbols that, if adopted, could have a universal meaning.* Ed.

Nan Lawler

Dear Sir: Inspired by Nan Lawler's suggestion, I would like to apply for the position of staff ignoramus in the Smithsonian's department of whaleology. I know absolutely nothing about whales, but have a considerable store of knowledge in several wholly unrelated fields. One qualifying idea I have is that I would be glad to discover a better preservative for the Institution's specimens by dropping your blue whale into a jar of the wrong kind of solution.
Kenneth W. Fuller
New Hartford, New York
Unlike most of the Smithsonian's mammal specimens, the great blue whale is made of plastic. Perhaps Mr. Fuller should pick elephants. Ed.

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By Timothy Green

Fifty years later, Tutankhamun's treasures are still a sensation

An exhibition at the British Museum, commemorating the discovery of the king's tomb, has set all London on its ear

"The outstanding feature of his life was the fact that he died and was buried." It is a strange epitaph for any man. But that assessment of Tutankhamun, ruler of Upper and Lower Egypt from about 1361 to 1352 B.C., made by archaeologist Howard Carter just 50 years ago as he uncovered the boy pharaoh's tomb, never seemed truer than in London this summer. The city is smitten with a severe case of Tutankhamun fever that has aroused instincts and passions normally reserved only for vital soccer or cricket matches. Walk through Bloomsbury at five o'clock any morning, if you can get up that early, and you join a hurrying procession of people armed with thermos flasks, umbrellas and canvas stools. Before the locked gates of the British Museum they join 50 or so stalwarts, huddled into sleeping bags, who have been camped there all night. Above the entrance to the silent museum, a long, gold banner heralds "Treasures of Tutankhamun" (as the Museum spells it).

In five hours' time, at ten o'clock, those who have waited all night get their reward; they are first into the stunning exhibition of 50 of the finest treasures from Tutankhamun's tomb, which are on display in Britain for the first time to mark the anniversary of their discovery half a century ago in 1922. Only very rarely have any of the treasures left Egypt, most recently for a small exhibition in Paris some years ago.

The current exhibition has been mounted by the Museum in conjunction with *The Times* of London (which published the first story of Carter's discovery in November 1922) and the *Sunday Times*. All profits of the exhibition will go to the UNESCO fund to save the temples of the Island of Philae in the Nile, which have been submerged the greater part of the year since the water level of the first Aswan dam, completed in 1902, was raised in 1933.

Opposite: One of a pair of life-size wooden statues of Tutankhamun that guarded the entrance to the burial chamber. His body is black probably because that was a color associated with regeneration.

In clothes more suited to English weather, Howard Carter (center), Lord Carnarvon and his daughter, Lady Evelyn Herbert, stand before the opened tomb.

The British Museum's beautifully mounted exhibition simulates the gloom of King Tutankhamun's tomb.

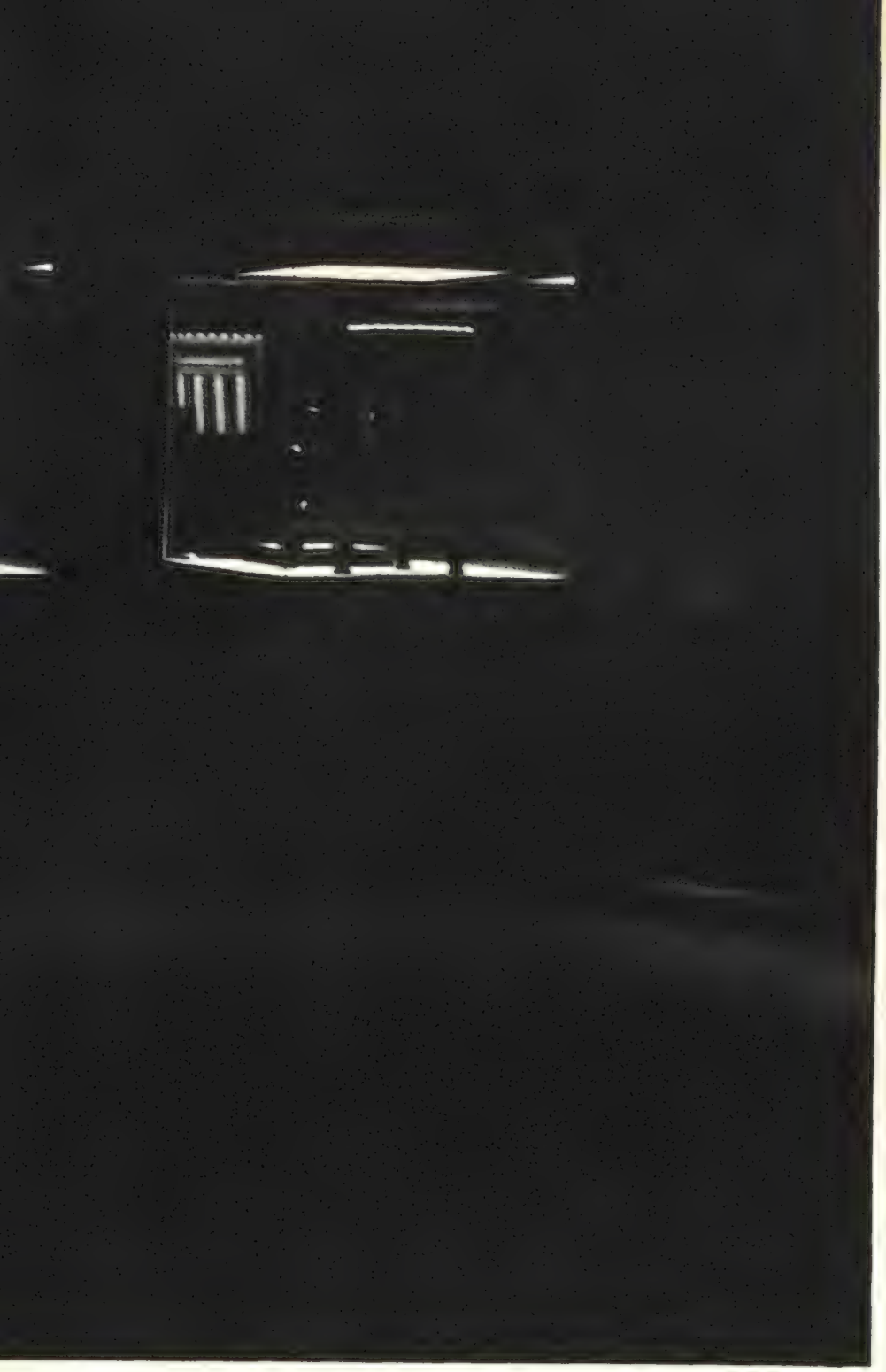
Ever since Queen Elizabeth opened the exhibition on March 29, the British Museum has been in a state of semi-siege. Almost 5,000 wide-eyed visitors flow through every day. Anyone who is so tardy as to join the crocodile queue winding through the surrounding streets after 12 noon may not get in that day. The pace is likely to keep up all summer, until perhaps one million people will have seen the lighted treasures from the surrounding darkness.

One consolation of the five hours or more spent waiting in line is that it gives the studious visitor a chance to bone up on who Tutankhamun was, how his tomb came to be found and the significance of the individual objects that furnished it.

Despite all that the tomb revealed of his death, the king's life remains largely a mystery. No one is certain even who his parents were. His right to the throne was established by his marriage to the princess Ankhesenpaaten, daughter of King Akhenaten (c. 1379-1362 B.C.) and his queen, the beautiful Nefertiti. Tutankhamun, or Tutankhaten as he was known until he came to the throne, became king at the age of nine and died of unknown causes when he was 18 or 19. Apparently he left no children (although two stillborn babies were found in his tomb). Like all the Egyptian kings, he was believed to be the divine son of the sun god, Amun, and a human mother; his name means "Living image of Amun" or "the life of Amun is pleasing." His queen Ankhesenpaaten changed her name to Akhesenamun —"She lives for Amun."

Although the nominal capital of Egypt was at Thebes (near the present-day Luxor), Tutankhamun seems to have spent much of his time at Memphis, on the Nile just south of Cairo, where his administration

Timothy Green was formerly the editor of the London Illustrated News *and a London correspondent for* Life. *His latest book is a survey of worldwide television.*



A pectoral of gold cloisonné is inlaid with glass and semiprecious stones.

centered. Since he was a young boy when he assumed the throne, the actual running of the country was always in the hands of his vizier, Ay, who succeeded him as pharaoh. Curiously enough, Tutankhamun's tomb was started originally for Ay, who was a much older man, but it was given over to the young king when he died prematurely.

And that, perhaps, is part of the reason why it survived, almost intact, for over 3,000 years. Despite the magnificence of its contents, the tomb was relatively small for a pharaoh. Most of the other pharaohs of the 18th and 19th Dynasties buried in the Valley of the Kings beside the Nile were accommodated in much grander manner, and thus became more obvious and tempting targets for tomb-robbers. Tutankhamun's tomb also was entered by robbers, probably twice shortly after his burial, but they were discovered before they took much. Thereafter the entrance, cut downwards into the rock floor of the Valley, was cov-

The "cow-bed" was not for sleeping, but for transporting the king to heaven.

ered by some huts put up for workmen building the tomb of Rameses VI. Their foundations hid it from robbers who, for thousands of years, ransacked every other tomb in the Valley; they almost concealed it from the archaeologists, too.

As early as 1820 the Italian Giovanni Belzoni (whom many regard as a tomb-robber himself, rather than an archaeologist) said that "there are no more tombs that are not known, in consequence of my late discoveries." Actually, during the late 19th century many royal mummies were found in the Valley, often all packed into one tomb after the robbers had done their work, but it certainly seemed as if no tomb had been undisturbed. The American archaeologist Theodore Davis worked in the Valley for 12 years from 1902 to 1914 without much success. However, he did find a few scattered relics bearing the name Tutankhamun, including a cache of sealed jars and linen. Davis ignored the latter find, but another Egyptologist, Herbert Winlock of the Metropolitan Museum of Art in New York, came across them by chance and immediately recognized their importance. With Davis' permission he had them sent back to the Metropolitan, where examination revealed them to be the remains of Tutankhamun's funeral feast and material used by his embalmers. That indicated that the tomb itself must be close at hand.

Certainly Howard Carter, an English archaeologist who had helped Davis, thought they were a vital clue. In 1914 Carter and his patron, Lord Carnarvon, took over the concession to explore the Valley. For eight fruitless years, interrupted by World War I, they worked with quite stunning lack of success. Their workmen shifted some 200,000 tons of rock, sand and rubble—a formidable task without any mechanical tools. They never found the slightest lead.

By the summer of 1922 Lord Carnarvon was almost

The king, in gilded wood, is about to harpoon his enemies, who have turned into hippopotamuses.

This model boat, one of several, may have been intended for the king's use in afterlife, or it may represent one of his funeral barges.

Another figure of the king, mounted on a leopard. The purpose of this piece remains a mystery.

ready to give up the search. But Carter, whose confidence and patience never wavered, argued that they should continue for one more season. He proposed that they dig in a small area near the entrance to the tomb of Rameses VI, which they had not excavated before in order not to inconvenience tourists visiting that tomb. Carter added that, if the search proved fruitless, he was ready to foot the bill for the digging himself. Lord Carnarvon was so impressed by Carter's confidence in ultimate success that he immediately agreed to let him go ahead—and on the same terms as in the past.

The "day of days" arrives

He need not have worried. Excavation was renewed on November 1. During the fourth morning's work Carter's men, after clearing away the remains of those ancient workmen's huts, came upon a stair cut into the rock. By late the next afternoon they had dug out 12 steps and reached the top of a sealed doorway. On November 6 Carter cabled Carnarvon in England: "At last have made wonderful discovery in Valley; a magnificent tomb with seals intact; re-covered same for your arrival; congratulations." While Carnarvon hastened out to Egypt, Carter, with extraordinary restraint, filled in the stairway and suspended further investigations so that his patron might witness the moment of entry into the tomb. In the suspense of waiting for Carnarvon to arrive, Carter often wondered if he hadn't dreamed the whole thing.

It was no dream. With Carnarvon finally on hand, they re-excavated the stairway and broke through the doorway into a rubble-filled passage beyond. Then, on November 26, 1922, came what Carter later described as "the day of days, the most wonderful that I have ever lived through, and certainly one whose like I can never hope to see again." They reached a second sealed door, 30 feet down the sloping passage. Carter, his hands trembling, made a hole in one corner, slipped a candle through and peered in. "At first I could see nothing, the hot air escaping from the chamber causing the candle flame to flicker but presently, as my eyes grew accustomed to the light, details of the room within emerged slowly from the mist, strange animals, statues, and gold—everywhere the glint of gold." Unable to bear the suspense, Lord Carnarvon asked anxiously: "Can you see anything?" "Yes," Carter replied, "wonderful things."

And what he saw in that moment was merely the beginning. They had broached only the antechamber; there were three more chambers, including the burial chamber itself. It contained four golden shrines, one within the other like a nest of Chinese boxes. Enclosed in the innermost shrine was a quartzite sarcophagus,

Wound into the bandages of the king's mummy were many pieces of jewelry, including this necklace. The pendant represents the vulture goddess, Nekhbet.

and inside *that* were three mummy-shaped coffins, also nested one within the other. Two were of gilded wood, but the third and final one—which contained the mummified body of the king—was of solid gold and weighed almost 300 pounds.

For the first time the tomb of a pharaoh had been found almost as it was originally equipped for him back in the Bronze Age. The robbers who had penetrated shortly after his death had stolen very little, although the place was in great disorder as they had tossed things carelessly from chests in their desperate search for small objects in gold. Otherwise everything was intact, right down to the baskets of fruit and meat to sustain the king in the afterlife and the oars set out neatly beside his shrine so he could row across the river to the Underworld.

The legend of "King Tut's" curse

The task of clearing the tomb and identifying relics was to occupy Carter for a decade. So painstakingly slow was the work that it was not until the autumn of 1926—four years after the original discovery—that he actually eased open the coffins within which the mummy itself lay.

Long before that Lord Carnarvon himself was dead. Some six weeks after they broke into the burial chamber in February 1923, Carnarvon died in Cairo of pneumonia contracted after a mosquito bite had turned septic. At the moment of his death Cairo was plunged into darkness by a power failure, while Carnarvon's dog at his home in England gave a howl and died too. These circumstances, not surprisingly, gave rise to the legend of Tutankhamun's curse, inflicted on those who violated his sacred resting place. The curse, if such it was, was not very potent; of the people who were intimately associated with the opening of the burial chamber, only three had died ten years later. Howard Carter himself lived until 1939.

But the legend served to heighten the excitement surrounding the discovery and made "Tut's Tomb" *the* archaeological triumph of the century to the layman, if not to the professional archaeologist. The legend is trotted out from time to time, as it was recently when the Egyptian official who signed the agreement for the treasures to go to London died of a brain hemorrhage three weeks later.

Certainly to all those people patiently queuing outside the British Museum this summer the boy-king has a quite extraordinary appeal. The sense of occasion was enhanced by the very movement of the objects themselves. They arrived in great secrecy in two chartered BOAC freighters and an RAF jet from Cairo to London Airport, and thence were spirited into the capital along a motorway that had been es-

pecially closed to all other traffic for added security.

The exhibition itself sets out to recapture at least some of the mood of the original discovery. Even the long wait to get in whets the appetite and makes each visitor sympathize with Howard Carter, who searched for years. Within the museum a whole wing has been transformed from its usual rather stodgy display of African masks and war canoes into the semblance of a tomb. You walk up a short ramp and through the portals of a darkened tomb, past large sepia photographs depicting the site in the Valley of the Kings. Carnarvon and Carter are seen at the site, remarkably correctly dressed. There they are, in the Egyptian heat and dust, perfectly turned out in tweed suits and waistcoats. Another rather touching photograph shows all their hats laid out neatly at the entrance to the tomb.

Then around a corner you come suddenly upon a gilded, life-size statue of the king (page 14), one of a pair that guarded the doorway to his burial chamber for over 3,000 years. Beyond are seven rooms through which you proceed on a voyage of discovery.

The exhibition comprises just 50 of the hundreds of funeral trappings, ranging from boats to bows and arrows, from chariots to beds and jewelry, that were discovered. But it represents the cream of the treasures and, moreover, is enough to satisfy one's initial curiosity. A wider selection would be too much to take in all at one time. The main difference between the tomb as Carter found it and the British Museum's re-creation is that the original was truly cluttered with artifacts; at the Museum each item is carefully displayed in top-lit cases well spaced out, so that you can walk round in the gloom to admire them on all sides. Each is set off as a prize possession in its own right.

Gold and jewels everywhere

The initial impression, of course, is of the opulence of Tutankhamun's court. Gold, lapis lazuli, ivory and alabaster were used unstintingly. Nothing slows up the visitors more than the display of jewelry, most of which was found wound into the bandages of the king's mummy. There are heavy necklaces, pectorals, bracelets, earrings and a great, flexible gold collar in the form of a vulture spreading its wings—all ample proof that Egypt was indeed the richest country in gold in the ancient world, and that her goldsmiths had perfected their art to a level rarely equalled again until Benvenuto Cellini 3,000 years later. The replicas of some of the jewelry are sold at the museum.

Their skill is best displayed in the work of a small, golden shrine set in a room of its own in the heart of the exhibition. The shrine, representing the sanctuary of Nekhbet, the vulture goddess, is made of wood over-

An alabaster unguent jar in the form of a lion standing on a pedestal. The paws have holes for the insertion of claws, possibly of ivory.

Among the richest treasures found in the tomb was a small shrine of Nekhbet, the vulture goddess, made of wood overlaid with gold modeled in relief.

laid with sheet gold on which are depicted scenes in the daily life of Tutankhamun and his queen. In particular they show the royal couple out hunting. In one panel the king is standing in a boat made of papyrus stems throwing a boomerang, while the queen, holding a flywhisk, looks on. In another (page 23), Tutankhamun bends his bow to shoot at a fine plump duck flying up out of the reeds, while the queen, sitting on a cushion at his feet, hands up another arrow with one hand and with the other seems to warn him not to shoot at a nest of fledglings in the reeds nearby.

The theme of hunting comes up again and again. A delicately carved scene on a wooden chest shows the king and queen out after wildfowl and fish. They are pausing by a small pond while Tutankhamun takes aim with his bow at a soaring duck, as a servant in the background comes back laden with a duck and fish already pierced by royal arrows. Then there is a fine fan, once adorned with ostrich feathers which, according to the inscription, were "obtained by His Majesty when hunting in the desert east of Heliopolis." The feathers have disintegrated with age, but the sheet gold covering the palm is embossed with scenes of the king riding in a horse-drawn chariot hunting ostrich. On one face the chariot is going at full tilt in pursuit of the ostriches with a hound running alongside; on the other, the king is returning home, preceded by his retainers with dead ostriches slung over their shoulders.

The abiding impression is of Tutankhamun and Ankhesenamun as a charming young couple out together having a good time. Tutankhamun himself seems to be a hunter and sportsman, rather than a warrior king. Even indoor pastimes were provided for in his tomb by three gaming boards, one of which is now on display, set out for play. The game apparently was rather like snakes and ladders, with the aim of reaching a square marked "happiness, beauty" while avoiding such hazards as the square marked "water" along the way. Moves were determined by throwing knucklebones or casting-sticks.

The climax to the exhibition, of course, as to Carter's own discoveries, is the great mask of solid gold, beaten and burnished, that was found over the head and shoulders of Tutankhamun's mummy (page 25). The mask, inlaid with semiprecious stones and colored glass paste, is undoubtedly the finest funerary mask ever found in the world. It is a serene portrait of a young man with rather narrow eyes, thin nose and full lips. The resemblance to the king himself seems to be fairly true as far as examination of his mummified face has been able to determine. The mask has an almost haunting presence as it stands alone in the final chamber of the British Museum's tomb. Visitors seem drawn to it, circling endlessly as if some spirit within it forbids them to leave and go on out into the cold light of day. For the children it has a special fascination; they ask more questions about it than anything else. One little girl wondered, half hoping, half afraid: "Do we have a mask over us when we die?" "No," her mother reassured her, "that's just for Tutankhamun, a great king."

In this panel from the shrine of Nekhbet, the king —comfortably seated on a stool—aims at a flock of ducks while the queen passes him another arrow.

Here, in another scene from royal family life, the king—once again seated on a stool—pours water from a vessel into the cupped hand of the queen.

Above: Although it is more than 3,000 years old, this handsome chest embellished with gilding resembles European furniture of more recent times.

Opposite: The most magnificent object in the tomb was undoubtedly this solid-gold mask, placed on the head and shoulders of Tutankhamun's mummy.

Hsing-Hsing and Ling-Ling from Peking

Panda photographs by Don Carl Steffen

The male is a conservative, the female a flamboyant show-off, but during their first days here both mainly slept

Hsing-Hsing, who is only a year old and a mere 74 pounds, looks shyly from the rear section of his air-conditioned enclosure.

Ling-Ling, one-and-a-half years old and 136 pounds, relaxes after playing in the dirt in her new National Zoo home.

Inquisitive from the start, Ling-Ling looks for some action on steps of her den.

By Larry Collins

It rained hard all day on Saturday, April 22, 1972. Even so, by 8:00 in the morning a line began to form at what had until a few days before been the Delicate Hoof Stock House Number One of the Smithsonian's National Zoological Park in Washington, D.C.

By 10:00 A.M. when one of the zoo's policemen opened the door, the line curled like a long tail all the way around an empty moated paddock nearby. The paddock had been home for two white rhinos until a few days before when they were trucked cross-country to San Diego's zoo to make way for what would become by summer's end two landscaped half-acre panda playgrounds, connected by moon gates.

Throughout that rainy day, the last of Ling-Ling and Hsing-Hsing's first week in the United States, more than a thousand people an hour passed by the panda-proof glass wall of the hastily refurbished enclosures. And throughout most of that day, the two gifts of the People's Republic of China to the people of America slept soundly, barely visible in the shadows of their private dens.

On Sunday it was sunny, the line was longer, stretching all the way down to the old stone Elephant House —and once again the pandas slept through the better part of the day.

Tex Rowe, one of the four zoo keepers assigned to the Panda House, was asked several times by disappointed visitors why he didn't go into the cage and shoo the pandas out so they could be seen. An animal handler all his life, having started out working big cats in a circus, Tex is also a good judge of people, and his response would vary depending on how he gauged the good nature of his questioners. Smiling through his

Mr. Collins, until recently a high school science teacher, supervises the National Zoo's panda unit.

More reserved, like all male pandas,
Hsing-Hsing sits in a bamboo pot.

After a headstand in her bamboo pot, Ling-Ling growls. Or is it a yawn?

Vandyke beard, he would say, "How would you like it if some stranger came into your room at three in the morning and chased you out of bed?" Or "They're still on Peking time, and they're young, so they need their sleep. Sorry to disappoint you, but the animals just have to come first."

Of course some visitors saw more than two black-and-white balls curled up in the shadows. Especially at feeding times the two giant pandas would come out into their enclosures and "perform." Ling-Ling, the female, is playful and extroverted—a clown, we call her. Hsing-Hsing (pronounced Shing-Shing), the male, is more businesslike, more conservative. For example, on the day when Dr. Ting Hung, director of the Bureau of Public Service of Peking, formally presented the pandas to Mrs. Nixon, Hsing-Hsing lumbered out, ate, took a turn or two around his enclosure and went back in his den to sleep. Ling-Ling, on the other hand, sat down on her haunches, pulled her nearly empty food dish up to her nose to get the last drops and rolled over backwards—all this with an occasional knowing look at the audience.

The difference in their personalities was apparent from the outset. They arrived at the zoo on Sunday morning, April 16, sometime around 7:30 (no one is certain of the exact time because we were all too busy to take notes or even to look at our watches). Still locked in the beautiful light green lacquer crates that had been put aboard the Air Force C-141 plane in Peking two days before, the pandas were weighed—Ling-Ling was 136 pounds, Hsing-Hsing 74.

Then the crates were put in the separate enclosures and opened. Ling-Ling exited immediately and prowled around her new quarters, investigating the potted bamboo plants and the log chaise longue that had been built for her. Then she turned her water pan over her head and knocked it clattering across the cement floor. Hsing-Hsing, on the other hand, remained suspiciously inside his shipping crate for about five minutes before venturing out.

Yang Chung, the zoo keeper who was among the Chinese officials accompanying the pandas to the United States, expressed concern about Hsing-Hsing because he showed so little activity during the day—perhaps a sign that he was unhappy and would not accept his new enclosure. We had decided to have a keeper on hand 24 hours a day for the first two days, and both pandas were found to be active mainly at night. One night Ling-Ling went after the potted bamboo plants, tearing off stems, eating some and leaving the rest lying around the floor. Also, she did headstands in the pots, which explains the brown color of her fur in some of the accompanying photographs.

We noted that Hsing-Hsing spent a good deal of his time at night scent-marking various parts of his cage. Scent-marking is not uncommon among pandas and many other animals; we knew that Chi-Chi, the old female in the London Zoo, does this, but one of Hsing-Hsing's methods struck our attention. He puts his forefeet on the ground and walks his hind feet up the wall till they are over his head. Then, in this supported handstand, he presses the glands around his ano-genital region against the wall or whatever object he wants to mark. We were delighted to discover this, mainly because it indicated that he was after all accepting his enclosure. Also, this particular posture has not, to our knowledge, ever been reported.

I should point out that a part of the panda keepers'

uniforms is a notebook and a pencil. Little is known about pandas. Besides ours, there are only five pandas in captivity outside of China—three in a North Korean zoo, Chi-Chi in London and An-An, a male, in Moscow. Over time our keepers' close and continuing observations will help fill in a great number of details of panda behavior.

Such information might shed light on a question many people ask and which has long bothered zoologists. Simply stated, what is a panda, an odd sort of bear or some kind of oversized raccoon?

Anatomically, the giant panda (whose scientific name is *Ailuropoda melanoleuca)* "is nothing more than a highly specialized bear," to quote from an authoritative monograph by the late mammalogist Dwight D. Davis. Serological evidence suggests the same. But giant pandas have the same number of chromosomes as raccoons (42) which is considerably fewer than bears. Furthermore giant pandas are clearly related to a brownish, raccoonlike animal from Tibet called the red, or lesser panda *(Ailurus fulgens),* and lesser pandas have long been considered part of the group that includes raccoons.

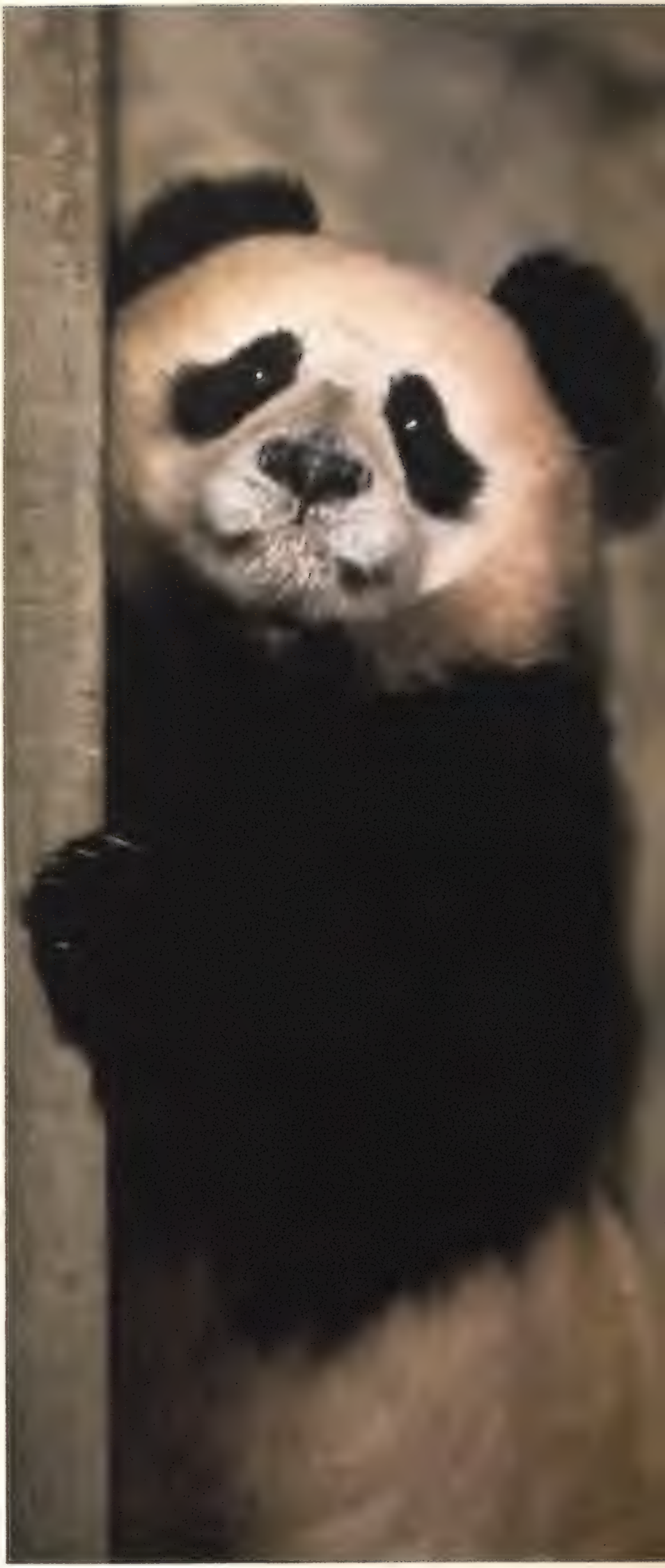
Assessing all of this and other evidence, John Eisenberg, resident scientist at the National Zoo, and Henry Setzer, curator of mammals at the National Museum of Natural History, suggest that pandas, giant and lesser, be considered a separate taxonomic family, in between the bears and the group *(Procyonidae)* that includes raccoons, coatis and kinkajous.

A long wait for mating

The Chinese, of course, have the most experience with pandas and the most information. Mr. Yang provided us with a great deal of advice and information that will make raising our pandas easier and make their transition to America less traumatic.

We feed them the same rice gruel which they ate in China, along with bamboo shoots which we grow on the zoo premises. (Some of the bamboo at the zoo was found to have a high lead content, presumably from automobile emissions, but the bamboo stand used to supply the pandas is remote from traffic and has negligible lead content.)

To their diet of gruel and bamboo, we have added apples and bananas and, in the case of Ling-Ling, carrots, and both are eager eaters. In their wild habitat, the bamboo and fir forests between 5,000 and 12,000 feet up the mountain slopes of Szechwan and Kansu provinces of western China, giant pandas eat not only bamboo and other vegetable matter but small animals like mice and voles. They prefer cold humid weather, so our Panda House is air-conditioned. The giant panda longevity record is held by a 20-year-old male



Hsing-Hsing peers by the corner of his den, which was his favorite place at first.

in Peking. Ling-Ling is now a little more than a year-and-a-half old, Hsing-Hsing slightly more than a year.

Naturally, we hope our two pandas will mate, but that event is far off in the future. The Chinese told us that in their experience pandas do not bear young until they are between five-and-a-half and six-and-a-half years old. Desmond Morris, in his book *Man and Panda,* reported that Chi-Chi first came into heat at three-and-a-half. We will simply have to wait and see. Success will depend in part on how the pandas have been treated in the interim. Chi-Chi apparently became too attached to her keeper to be able to take an interest in the Russian male imported in an attempt at an arranged marriage.

For several reasons, including the above, our keepers (who, in addition to Tex Rowe, are David Bryan, Curley Harper and Mike Johnson) will not spend too much time working with the pandas. We hope to strike a balance between keeping the animals as wild as possible and at the same time letting them learn to be at home with the keepers whose contact in such matters as feeding and cleaning the cages is obviously necessary. Others, including myself, are kept out of the pandas' enclosures.

Beware the playful panda

There is yet another reason for being a bit standoffish, at least at this point. Mr. Yang warned us not to get too close to Hsing-Hsing since he is quite prepared to bite, and an animal that can bite through a thick bamboo shoot can inflict serious damage to a human arm. So far there has been little interaction between Hsing-Hsing and the keepers. None of the keepers has been charged by him; instead he lumbers towards them menacingly. Ling-Ling is more sociable and will sometimes indicate her readiness to play by swatting at the glass. Caution is advised here as well.

At one point when Mike Johnson was enticing Ling-Ling out of her den with a piece of whole wheat bread and honey, the panda charged him. Mike ducked around one of the potted bamboos and Ling-Ling followed—around and around the bamboo bush until the cage door was opened and Mike escaped.

On another occasion Curley Harper was in Ling-Ling's cage playing with her and held out a carrot. With a lightning-quick swipe of her paw she knocked it across the room. "That was okay," said Curley, "until she started to get between me and the door. That's when I split, man."

One thing is certain. As the pandas adjust their biological clocks to this time zone and as they grow more accustomed to their new surroundings, to their keepers and eventually to each other, there is going to be plenty of action at the Panda House.

Our delayed present: A musk-ox caught cold

Diplomatic missions are rarely among the assignments of zoo directors, but it fell to the National Zoo's Theodore Reed to follow the Nixons into the People's Republic of China.

He left on April 6, with Milton and Matilda, two musk-oxen from the San Francisco Zoological Gardens, having been delayed several weeks while young Milton got partially over a bad cold (during which the accompanying photographs were taken by George Knight). It was the time of year for these Alaskan creatures to shed their winter coats. While they may not have looked their best upon arrival in Peking, they were enthusiastically received. By May 1, Milton's cold was reportedly much better, and Dr. Reed had returned with some relief to more familiar tasks.

In San Francisco Dr. Reed pondered Milton's health (above). At right is a portrait of Milton before he began to shed his winter coat.

By Daniel Jack Chasan

Bay Area subway: a catastrophe or an urban triumph?

The 'world's most advanced transit system' won't stop all San Francisco traffic jams but is already changing the face of the city

It has yet to transport one paying customer, but the nascent Bay Area Rapid Transit system (BART) has already received international attention as the most advanced urban transit system in the world. Teams of Russians, Japanese, Yugoslavs and Western Europeans have come to inspect the routes and equipment, and, before the recent vote in which Atlanta committed itself to building a billion-dollar transit system, BART general manager B. R. Stokes recalls, "there couldn't have been anyone in Atlanta who didn't come to see us."

Everyone is impressed by much the same things: the speed of the trains, which will travel up to 80 miles per hour and be kept on schedule by a big computer that checks their position every three seconds; the fact that, although there will be a trainman on every train, the operation will be fully automated; the air conditioning and roominess of the coaches; the glossy modernity of the stations and the creation of parks above underground station sites and along many miles of elevated track.

But among the residents of San Francisco and the other Bay Area communities through which BART trains will run, the 75-mile, $1.4 billion system has quite a different image. In those places, it is associated with inconvenience—the San Francisco thoroughfare

In past issues, Mr. Chasan has described the cleanup of Lake Washington and the efforts to start up the Batavia proton accelerator.

Fully automated and capable of speeds to 80 miles per hour, a BART train is on display in the gleaming new subway station at Lake Merritt, awaiting its much-delayed opening run.

Antigrowth crusader Alvin Duskin calls BART "the greatest disaster to hit the Bay Area."

BART's Lawrence Dahms (opposite) sees it as an alternative to unplanned urban sprawl.

of Market Street has been torn up for years—and delay. The system was originally scheduled to begin operation in 1969. Now, the first line will probably start no sooner than September or October of this year, and the full system sometime in 1973.

The completion of BART has, in fact, become the subject less of eager anticipation than of wry jokes. Lawrence D. Dahms, BART's assistant general manager for planning and public service, predicts that however much longer BART is delayed, when it finally opens most San Franciscans will be astonished that it has started so soon.

In January of this year, when the starting date of the first short segment was still officially set for March, I stopped one morning in a little lunch-counter restaurant on Market Street, with an assemblage of BART hammers clattering right outside the plate-glass window. After ordering a cup of coffee, I asked the proprietor, a graying man with a Greek accent, when he thought BART would start running.

"You can't say for sure," he replied. "I give them two more years."

"Two years," hooted a skeptical customer with a cowboy hat and a Western twang.

And a young woman who had stopped for coffee on her way to work chimed in with a loud, derisive "Ha!"

In addition to public grousing, the delay and the accompanying cost overruns have evoked strong criticisms from the Bay Area press. National coverage has been almost uniformly favorable, but the local press has found several occasions to complain, at least in its editorial columns.

Some delay and cost overrun seem to be almost inevitable in any project of BART's magnitude, but BART has had problems of its own. The most recent have included a long strike at the Rohr Corporation, which is building all the 70-foot aluminum coaches, and the need to work a great many bugs out of the complex and previously untried control systems. BART also took time to test a series of the prototype coaches, marking the first time that an urban transit system had ever used prototypes instead of waiting for the "revenue cars" that would actually carry passengers.

One of the earliest major problems encountered with the prototypes was "flashovers," the shorting out of the train motor by metal dust blown upward from the third rail. BART engineers kept the dust out by putting a filter on the motor, then discovered the filter made the motor overheat, and eventually had to design a new filter. General Manager Stokes recalls that at one point during the prototype testing he saw a list of 170 things that had to be changed.

An early and particularly trying cause of delay was the need to negotiate agreements with all of the three counties and 16 cities and towns through which the system would pass. Stokes says that BART had already worked out what it thought were firm agreements with all the relevant local governments before the voters approved the bond issue in 1962, but many of the government units had apparently thought that BART was just a pipe dream. Once the bond issue actually passed they wanted to sit down more seriously and make plans all over again. Stokes also mentions, rather pointedly, that the state division of highways would have been under no obligation to secure local consent

if it had planned to build freeways through those same areas—and that, unlike BART, the division wouldn't have had to compensate utilities for forcing them to move transmission lines.

The idea of BART developed from regional planning done between 1951 and 1957 by the state-established Bay Area Rapid Transit Commission, and particularly from a comprehensive plan drawn up between 1953 and 1955. The original conception was a 385-mile system that would link San Francisco with points in San Mateo County to the south, Marin County to the north and the East Bay counties of Contra Costa and Alameda (which includes both Berkeley and Oakland). A Bay Area Rapid Transit District organization, authorized by the state legislature in 1957, began working in 1958 to develop a detailed transit plan.

By the end of 1962, when the plan was submitted to the voters, the length had been pared down to a relatively manageable first stage of 75 miles, San Mateo had dropped out, and Marin, which could have been served only by operating at a deficit, had pretty well been forced out. The tracks that have now been laid begin in Daly City, south of San Francisco proper, the site of Malvina Reynolds' original "houses made of ticky-tacky," and continue up through the largely Mexican-American Mission District to Market Street. From downtown San Francisco they tunnel under San Francisco Bay to Oakland, following the old ferry route, the shortest of all possible crossings, from terminal to terminal. In Oakland the line splits, one branch going south to Fremont and the other north to Richmond. The northern line splits again, still in Oakland, and sends another branch east to Concord, some 45 rail miles from the Fremont stop.

Most of the East Bay communities that BART will serve are white suburban commuting towns, many of whose residents now drive to and from San Francisco five days a week in their own cars. Eliminating the congestion caused by all those cars was a major consideration of the planners who conceived BART, and it was the strongest selling point for the bond issue passed in 1962.

A transit study made in 1967 concluded that by 1975, when BART expects to be carrying roughly 200,000 riders per day, the tube under San Francisco Bay would probably carry as many people as an additional seven-lane bridge. And a good many Bay Area residents really do expect BART to reduce, if not eliminate, the tie-ups, noise and air pollution caused by commuters' cars. But transit planners in the Bay Area say that such expectations are sheer delusion. One, an official of the San Francisco Department of City Planning, explains that BART was conceived as part of a "balanced transportation system" in which cars would have an important place, and adds with a wry

Bay Area subway

The lot at BART's Walnut Creek station will hold 240 cars, but many will still pour into the city.

smile, presumably directed at the false hopes of Bay Area voters, that BART is emphatically "not a means of doing away with the automobile."

BART officials themselves do talk of "pulling people out of cars" with the speed and comfort of their trains, and don't conceal their hostility toward the state division of highways, the highway lobby and pro-highway public policy in general. But Dahms takes pains to point out that the system will be an "alternative" to the private car, not a replacement for it, and he says that although the original BART planners really did believe that the first stage of the system would eliminate congestion, their belief—even for the 123-mile first stage they had at one time envisioned—was totally unrealistic.

Dahms thinks BART's greatest value will be as "a base for a certain kind of development"—a pattern of regional growth in which the population will be concentrated in city and town centers, linked by transit rails, and not diffused throughout a highway-nourished sprawl. He points out that this development pattern was envisioned by the original BART planners and was endorsed by the Association of Bay Area Governments in 1969.

He also believes BART will increase the chance that the Bay Area's growth will take place in a planned and rational way. He says that in the mid-1950s, when BART planners were figuring out where to put routes and stations, they "went to the East Bay communities and looked for the people who had been thinking about the ways in which these communities should develop. Some communities didn't even have such a person." Now, however, spurred by the need to decide where the stations should go and by the expectation that the stations would be centers for rapid economic and population growth, all of the communities have drawn up plans.

In contrast, Dahms believes that a reliance on highway systems discourages advance planning. A report issued in 1970 by the BART planning office observed, "The prime criterion which must be satisfied to justify construction of a freeway or bridge in California is projected demand. A generation of professional traffic engineers has grown on this tradition, and a generation of financial consultants has become accustomed to insisting on the certification of these traffic engineers. The result is a propensity to justify transportation projects which follow development, rather than to make effective use of such facilities in guiding development."

All the local planning has included high-density zoning around station sites, but very little building has actually taken place around most BART stations. The original announcement of the station sites touched off a great real-estate boom, but the boom petered out years ago. Most potential developers have been waiting to see when BART will really start, and what changes it will really make in commuting patterns and demand for living and office space.

Downtown San Francisco is the greatest single ex-

ception: There, an estimated billion dollars' worth of new office construction has already gone up within five minutes of BART stations, and much more construction has been scheduled and planned. Whether or not the decision to build BART provided *the* original impetus for new office construction in San Francisco may be, as one city planner puts it, a "chicken and egg proposition," but virtually everyone considers BART the most important single reason for the present construction boom.

One might think that BART's potential for shaping development in the Bay Area would make it an object of prime interest to local environmentalists, but that hasn't been the case. The existence of BART provides an argument against the proposed Southern Crossing bridge over the Bay, on which the voters will decide this month; and San Mateo environmentalists, who originally wanted to keep BART out, now hope that a BART line through the most highly developed strip of San Mateo may help prevent development along a newly completed freeway, Interstate 280, which runs through what has heretofore been a green belt. But in general, except for opposing BART's decision to permit commercial advertising in its stations and hoping that the system will reduce automotive noise and smog, they haven't given BART a conspicuous place in their thoughts or plans.

BART figures much more conspicuously in the thoughts of Alvin Duskin, a former San Francisco garment manufacturer who last year ran unsuccessfully for the city's board of supervisors and led an unsuccessful initiative campaign to forbid the construction of buildings higher than 40 feet. Duskin's political losses were far from disastrous—his antihigh-rise initiative got more than one-third of the vote—and now, having sold his business and devoted himself nearly full time to politics, he constitutes a serious political presence in the city.

A view from Telegraph Hill

Duskin says, "BART is the greatest disaster to hit the Bay Area." When he says that, and a San Francisco city planner says, "BART is the greatest capital improvement in San Francisco's history," they are talking about the same thing: BART will increase the value of land in downtown San Francisco, providing a strong incentive for high-rise construction, and will funnel a large enough work force into the area to enable it to become a center for corporate headquarters and the tall buildings that house them. The planner, like the original planners of BART and the executives of the big downtown banks and corporations who spent $186,000 selling BART to the voters in 1962, find the prospect very attractive. Duskin doesn't.

He doesn't want San Francisco to grow, and he especially doesn't want high-rise office buildings to change the shape of San Francisco more than they already have, or to inundate intimately scaled neighborhoods like his own on Telegraph Hill. He argues that BART will tend to, and was in fact designed to, encourage the separation of working areas and residential areas—the centers of development foreseen in the regional plan were specialized centers, not mixtures of homes and offices—and he agrees with Jane Jacobs that every neighborhood should support the greatest possible variety of activities. And he thinks that BART is totally irrelevant to the goal of reducing or eliminating the flow of cars into the city; keeping cars out is a political problem, he says, and the way to do it is to simply close down the freeways, or get rid of all one-way streets and public parking downtown.

If San Francisco's continued growth is inevitable, Duskin says, then BART is no worse a means of feeding it than any other. But he doesn't believe growth is inevitable, and, as evidence, he points to Oregon officials' recent decision to discourage growth and San Francisco's significant vote.

BART has also been criticized for ignoring the needs of the poor. Certainly the planners of the 1950s didn't give much thought to the poor, but the social concerns and community pressures that emerged in the 1960s did force BART to change the locations of some of its stations to better serve poor neighborhoods and to integrate its contractors and building force. Still, it is basically the same system that was designed in the 1950s. The fares will range from 30 cents to $1.25, and the minimum one-way fare across the Bay will be 85 cents, which, as black State Assemblyman Willie Brown puts it, is "pretty steep for poor folks." Stokes argues, though, that if one considers all the costs involved, riding BART will be cheaper than driving a car, and will enable central-city job seekers to reach many suburban factories that have hitherto been inaccessible without a car.

For instance, he says, the Fremont terminus lies only two miles from a huge General Motors plant, which would be only a short, convenient bus ride away if anyone decided to operate a bus there. Brown, who is chairman of the state assembly's ways and means committee, notes that the system wasn't designed with such reverse commuting in mind—the lines don't go all the way to potential employers, and the stations are in residential areas rather than industrial parks—but says that the potential for reverse commuting is inherently there. And Stokes says that he, for one, hopes GM will decide to operate a bus between the Fremont station and its Fremont plant, and hopes many other companies that build factories in outlying areas will plan to provide bus service to and from the nearest BART stations, instead of having to build two-acre parking lots for one-acre plants.

Stokes thinks it's irrational to talk about stopping all growth, and says that he himself has no misgivings about the growth that BART will stimulate, "if the people who are charged with controlling that growth do their job." Then he says that control, which includes both the drawing up of plans and their enforcement, is totally outside BART's sphere of authority, and will depend on a welter of "political and private decisions." He is pleased by the amount of planning that has been done so far, although some of the communities involved may not realize how difficult enforcement of their plans will be.

Some of the relevant private decisions made so far haven't seemed quite in the spirit of BART: a shopping center that's being built in an Oakland redevelopment area near a BART stop will contain parking space for thousands of cars, and a big regional shopping center currently being built in Richmond will be well beyond anything but driving distance from the station there.

Dahms says that if development in a given community seems to be taking undesirable forms, BART planners won't hesitate to call it to the community's attention. But when asked if BART could actually do anything to change an undesirable course of growth—if it could, for instance, acquire and set aside land to keep a given area from becoming an unbroken thicket of high-rises—he sits back in his chair, his voice drops, and his answer is a single, regretful "no."

Dahms believes that BART's success as a means of channeling development, and even as a transportation system, depends not only on local zoning and enforcement but also on a broad range of public policy that supports, without simultaneously undermining, mass transit and a concentrated pattern of growth. He says that the 1970 census, which showed that people had been moving out of the cities and into the surrounding sprawl, simply reflected a public policy that since 1946 had encouraged suburban sprawl by building highways, zoning residential areas around cities for low density, establishing interest rates that favored suburban building, and a host of other things.

In order to change this pattern of development, Dahms says, it will be necessary to change the entire range of public policies that have supported it. And in order to make BART work, it will be necessary, for one obvious example, to forego building still more bridges and freeways to all the points that BART serves. "There's a tendency to consider BART a kind of test-tube model," Dahms says. "That's crazy. The question isn't 'will BART work?' but 'will we make it work?' "

One of many BART-impelled projects in the city, a new high-rise blossoms amid the clatter and confusion of subway construction on Market Street.

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Judge

An 1896 cover of *Judge* superimposed the head of that champion loser, William Jennings Bryan, on a popular baby picture of the day. The unreachable butterfly is the Presidential vote.

By Gene Farmer

In an election year it's useful to remember might-have-beens

The National Portrait Gallery's new show, devoted to Presidential losers, raises a fascinating question: What if they'd won?

In all of us there is something of baseball's Leo Durocher, who is supposed to have said "Nice guys finish last" (Durocher himself hasn't finished first lately), and of football's Vince Lombardi, who insisted that "Winning is not everything. It is the only thing." Even so, in a nation which has an almost ghoulish fascination with the might-have-beens of its past, our general lack of interest in the men who sought the Presidency without success is curious. This is too bad, for by and large the losers constitute a group of formidable quality in American history.

Losers they were, to be sure, but some of them also won. Indeed, it comes as a shock to discover that approximately one-third of the men who won the Presidency—including the present incumbent—were also losers, either before they held the office or in unsuccessful attempts to keep or regain it.

Merely to ask the question, "Why bother with losers?" is to apply the scoreboard judgments of Durocher and Lombardi to the outcomes of the American political process. Sectional passions ran just high enough in 1844 for Henry Clay to lose by 37,000 votes out of 2.7 million cast. A shift of 8,000 votes in the right states would have put Clay in the White House. To read such statistics is to be reminded of Richard Nixon's eyelash loss to John F. Kennedy in 1960. But in 1960 just enough Americans wanted Kennedy to elect him, and in 1844 just enough *didn't* want Clay to elect James K. Polk instead.

It is easy to support the conclusion of Marvin Sadik, director of the Smithsonian's National Portrait Gallery: "It probably is fair to observe that the nation usually gets what it wants, sometimes what it deserves, and more rarely what it needs." But this is a much neglected historical subject, although the current exhibition at Mr. Sadik's gallery in Washington—which runs through September 4—should revive interest in it. Entitled "If Elected. . . ," the show recalls a succession of unsuccessful candidates from 1796 to 1968, and it is as instructive as it is elaborate (80 portraits and some 500 items of campaign paraphernalia). Everyone who sees it is free to make his own value-judgments about who would have made a better or a worse President, and a personal judgment is as good as any.

Not many writers have addressed themselves to Presidential losers. Irving Stone is one of the very few to do so in the lingua franca of popular history. In a 1966 updating of his book, *They Also Ran,* Mr. Stone concluded that the judgment of the American electorate was less than omniscient, and that we had gone for the demonstrably better man only a little more than half the time, not counting election years in which he judged the opposing candidates to have had approximately equal qualifications (Herbert Hoover versus Alfred E. Smith in 1928, for instance).

Winners or losers, very few Americans have sought the Presidency for ignoble reasons, however ignoble the means employed by their followers to get it for them. This is a country which—at least since the time of Andrew Jackson (a loser himself in 1824)—has sought to deify the common man; yet few truly "common" men either won the Presidency or even sought it.

Gene Farmer is a senior editor and former London bureau chief and foreign editor of Life. *He is the author of* Massachusetts: The Anatomy of Quality *and co-author of* First on the Moon.

This portrait of Andrew Jackson, a loser in 1824, was painted by Aaron Corwine a year later.

Most of the also-rans had that little something extra. Sometimes it was character and incorruptibility, as in the case of Samuel J. Tilden (1876). Sometimes it was a thirst for the power of the world's most prestigious elective office. Sometimes it was a simple sense of duty or noblesse oblige, as with Horatio Seymour in 1868, Judge Alton B. Parker in 1904 and John W. Davis in 1924; all of them knew the Democratic nomination was worthless when they unhappily accepted. For that matter, not all of the winners desired the office any more than did William Tecumseh Sherman ("I will not accept if nominated and will not serve if elected"). William Howard Taft (1908) and Warren Gamaliel Harding (1920) were pushed into the Presidency by others, especially their wives. It was Harding who uttered a *cri de coeur* that illuminates the agony the losers escaped: "I can't make a damn thing out of this tax problem.... God, what a job!"

No doubt the man Harding defeated, his fellow-Ohioan James Middleton Cox, would have made a better President. Forget it. Harding promised what the American people wanted in 1920 ("not nostrums but normalcy"), while Cox was running with the League of Nations albatross around his neck, although he had a principal asset in a Vice-Presidential nominee named Franklin Delano Roosevelt.

There is plenty of campaign memorabilia in the exhibition from the years after the Harding-Cox confrontation, but it is the 19th and early 20th centuries that contribute most of the charm. Here we encounter the "full dinner pail" that William McKinley and Theodore Roosevelt made a winning issue in 1900, a silver-topped William Jennings Bryan cane, a Grover Cleveland rooster ("I crow for Cleveland") from the losing Democratic campaign of 1888, an authentic "Booz bottle" from William Henry Harrison's "log cabin and hard cider" campaign of 1840.

Except in the War of 1812, Harrison was a born loser. He lost in 1836 to Martin Van Buren. Trying again in 1840, he won; but then he delivered—on a fiercely cold March day, without an overcoat—the longest Inaugural Address ever, one hour and 40 minutes. He caught pneumonia and was dead exactly a month later.

And Theodore Roosevelt? Another loser, if you will, but a great President also. He lost when he tried to come back in 1912, his Bull Moose candidacy endorsed by men whose names still ring a bell: Harold Ickes, William Allen White, Alfred M. Landon, Felix Frankfurter, Norman Thomas and a very youthful Dean Acheson. "They never come back" applies to the Presidency as well as to the heavyweight championship; only Grover Cleveland and Floyd Patterson are the exceptions in their respective divisions.

William Jennings Bryan would probably win any poll for favorites among the losers. This would be a suitable posthumous tribute to a man who was never elected to anything but Congress (two terms from Nebraska), but made three unsuccessful bids for the Presidency (1896, 1900 and 1908). To be sure, Henry Clay also ran and lost three times, but his claim to the

Mr. and Mrs. Jackson P. Ravenscroft, Tucson

National Portrait Gallery

Horace Greeley probably couldn't win in 1872 anyway, but Thomas Nast's savage caricature certainly was no help.

championship is less secure; his first attempt, in 1824, was made when party lines were not yet drawn in any way resembling those of today. For that matter, the Socialists ran Eugene V. Debs five times and Norman Thomas six times, without ever polling more than 919,000 votes.

Bryan should be the champion loser not because he ran most often, which he did not, or because he should have been elected, which he should not have been, but because of his luck.

Bryan was a lucky man just because he was a three-time loser. One year in the White House would have been enough to expose his dreadful shortcomings; in fact, one year *was* enough when Woodrow Wilson made him Secretary of State as a reward for helping Wilson get the Democratic nomination in 1912 (which Bryan, after three unsuccessful tries, still would have liked for himself). He did have political cunning of a sort, and no man more personally attractive (except, possibly, Wendell Willkie and Adlai Stevenson) ever offered himself for the Presidency and failed to win. There is still something appealing—and appalling—about Bryan making 36 speeches and eating six meals in 24 hours, rubbing himself down at night with medicinal gin which, to the teetotaling Bryan's dismay, accompanying newsmen chose to apply internally.

Bryan in his campaigns, and Willkie in 1940, sought to overwhelm the electorate with physical stamina and charisma—before the word was invented. Both failed. Bryan was running against money, which the Republicans had a lot of in 1896, and Willkie was running against Franklin D. Roosevelt—enough said.

In all but a very few of the elections recalled by the Portrait Gallery's splendid exhibition, it really does not appear that the election of an also-ran from one of the major parties would have had a crippling effect on the conduct of our national business. Probably Lewis Cass and Horatio Seymour were better qualified for the Presidency than Zachary Taylor and Ulysses S. Grant, but we survived their administrations, and we would have survived Bryan or, in 1884, James G. Blaine ("continental liar from the State of Maine").

Do we really want a choice?

This is precisely what the disestablishmentarians of our day deplore—that is, the lack of "a choice." They miss the point. Americans historically have recoiled from extreme choices; they simply don't like them. They made that clear in 1964 by their massive rejection of Barry Goldwater (whom we also would have survived). The truth is that our political system is designed to give the voters a small number of acceptable choices. Two is the minimum, and more often than not—in the practical sense—two has been the maximum. Even though they did not always see it that way in the heat of the campaign, the voters usually had some assurance that, whatever choice they made, it would be "safe." They could go to bed on election night knowing that the sun would come up in the morning for another four years. This is the real legacy of the also-rans: to offer the American people an alternative which might involve a new lease on the White House but did not promise to smash up the kitchen crockery.

Skeptics may question whether we would have survived George B. McClellan, who ran against Lincoln in 1864, or Aaron Burr, who opposed Jefferson in 1800. The answer in McClellan's case has to be yes; "Little Mac" was a strange fellow with a railroad-builder's mind and a Napoleonic complex bordering on the psychopathic, but Grant, Sherman and Thomas (the "Rock of Chickamauga") had virtually won the Civil War by Inauguration Day in 1865 and its outcome would not have been affected by Lincoln's defeat.

Aaron Burr is a more interesting enigma. He was the original wild card in American political poker (among other things, he was the first man to use the

Presidential losers

Tammany Society in New York for political purposes). When he and Thomas Jefferson tied for votes in the Electoral College in 1800, Alexander Hamilton helped throw the election to Jefferson. Burr presided over the Senate as Vice President in an unexceptionable manner, and had he not killed Hamilton in a duel (in 1804, after Hamilton blocked his election as governor of New York), he would have been as unremembered a Vice President as Hannibal Hamlin of Lincoln's first term. But there was a devil in Burr. He conspired with Brigadier General James Wilkinson, then the ranking officer in the U.S. Army, in a harebrained scheme to carve a new country out of part of the American West and Mexico; was tried for treason and acquitted; and finally died in New York poor and relatively unnoticed. Notice he deserves: It was Burr's near miss in 1800 that led to the enactment and ratification of the 12th Amendment, which laid the cornerstone of our present two-party system by providing the machinery to elect a President and Vice President of the same political affiliation.

Some really did matter

Since the election of 1800 may be cited as one that really did make a difference, Burr has to be counted as a very important loser. So does Clay, whose loss to Polk in 1844 made the Mexican War inevitable. So does Stephen Douglas, since Lincoln's victory over him in 1860 precipitated the Civil War (although as a Senator the "Little Giant," who saw no moral issue involved in slavery, unwittingly had done more than Lincoln to bring the war about). Douglas had his own campaign formula: "I live with my constituents . . . I eat their corn dodgers and fried bacon and sleep two in a bed with them." It worked at the state level but not at the national level.

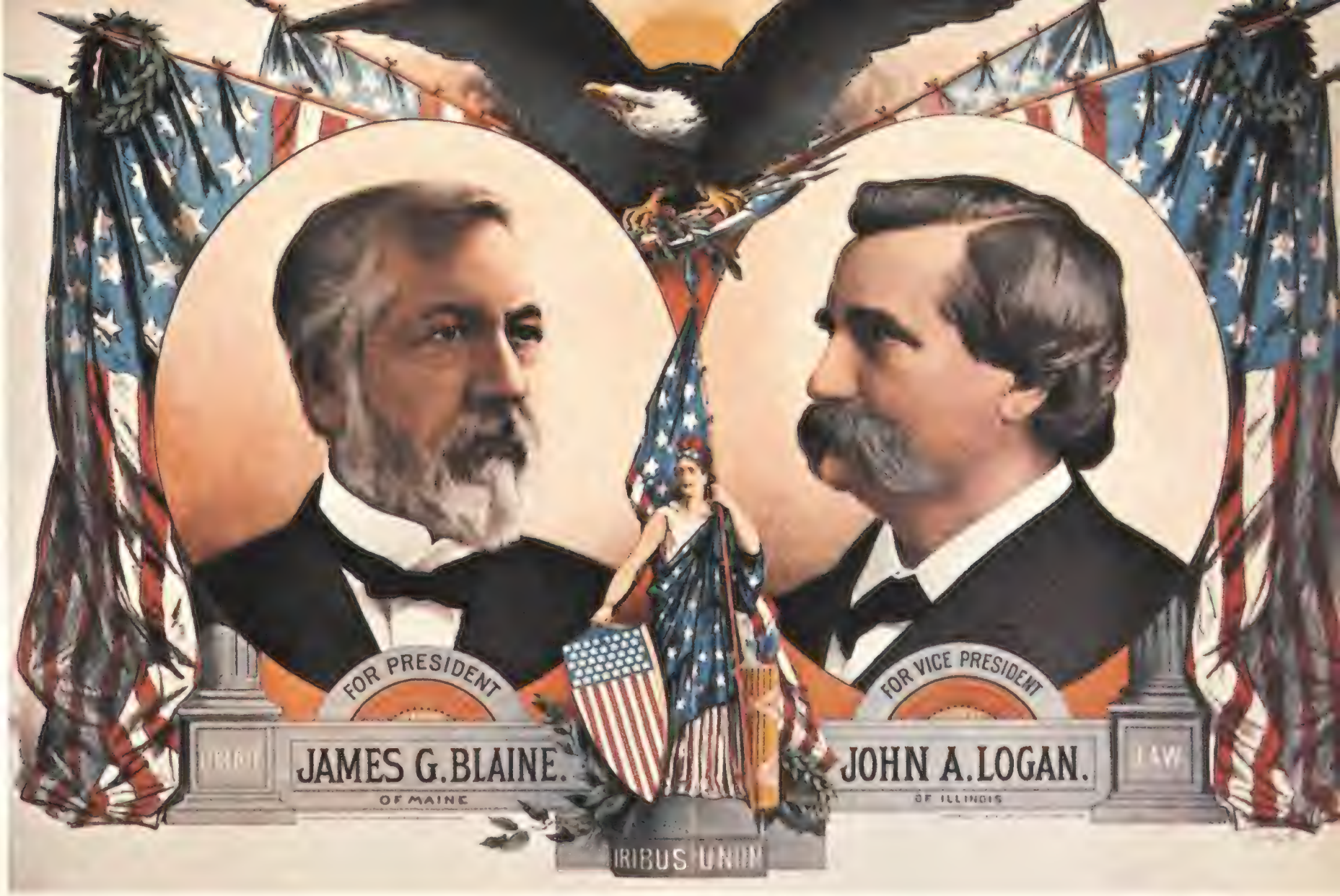
Sticking to elections in which the result *did* matter, after all, we have to cite Theodore Roosevelt in 1912 and Herbert Hoover in 1932; T.R. because his defeat damped down the fires of progressivism in the Republican party, Hoover because his victorious opponent, Franklin Roosevelt, substantially rewove the social fabric of America.

But "critical election" is too narrow a measurement, because men like Willkie, Stevenson and Thomas E. Dewey belong on anyone's list of major-league losers. Willkie and Stevenson ran against hopeless odds, but Dewey's upset by Harry Truman in 1948 never has been satisfactorily explained. Seldom has a man more able than Dewey striven for the White House, but he never projected in public the private personal warmth that makes his closest old associates speak of him still with a kind of veneration that belies the accepted popular image.

Say this for the losers, too: With rare exceptions, they lost the way they ran—in big-league style. Clay, on getting the bad news in 1844, raised his glass, smiled and said: "I drink to the health and happiness of everyone here." Douglas held Lincoln's stovepipe hat dur-

This paper lantern didn't save Tilden and Hendricks, the Democrats in 1876, from a questionable loss to Hayes.

Cornell University, Douglas Collection



A campaign poster from 1884, when James G. Blaine —"plumed knight" or "continental liar," take your choice—headed the losing Republican ticket.

Library of Congress

ing the 1861 Inauguration. Dewey was as surprised as George Gallup by the 1948 result, but he conceded as gracefully as Adlai Stevenson, which is saying a lot, and he went right on being New York's best governor since Al Smith. And then there is Samuel Tilden, the only man we know to have had the Presidency stolen from him. Although he won the popular vote and apparently had a majority in the Electoral College, the Republicans—who controlled the election machinery in three Southern "Reconstruction" states—threw out enough Democratic votes in those states to alter the result. After months of controversy and double-dealing on both sides, Tilden lost the Electoral College by one vote. There was a terrible ugliness in the air. Tilden looked ten feet tall when he counseled his supporters to let the verdict stand and recognize Rutherford B. Hayes as the President. Winfield Scott Hancock had the same stuff in him; when he awoke at dawn the morning after the election, his wife told him that James A. Garfield had won instead. "That is all right," Hancock said. "I can stand it." And he turned over on his pillow and went back to sleep.

The obscurities among the losers have a fascination all their own. They began to be numerous during the last third of the 19th century, when splinter parties started seizing on issues like temperance, women's rights and agrarian dissent. These candidates never got elected, of course, but some of them had the gift of prophecy. In 1884 Belva Ann Lockwood, the first woman lawyer admitted to practice before the Supreme Court, got 4,149 votes on the Equal Rights Ticket—but she, like Victoria Woodhull before her in 1872, was handicapped by the fact that her obvious constituency could not vote at all. Both anticipated Shirley Chisholm by about a century.

Some of the splinter also-rans must be taken seriously. Although the Progressive candidacy of the elder Robert M. La Follette in 1924 did not materially affect the outcome, it did attract nearly five million votes in a Coolidge year. More importantly, the La Follette brand of progressivism had made his home state of Wisconsin a laboratory for social reforms. FDR did a number of things in the early days of the New Deal which were not so experimental as they looked. They had been tested in Wisconsin.

There is one other point that the National Portrait Gallery exhibition makes clear. We used to get a lot more fun out of our politics, even though we took the game as seriously as we do now. For one thing, we sang a lot. Even a blow below the belt was often delivered

with a song. Martin Van Buren, after his defeat by Harrison in 1840, complained that he had been "drunk down, sung down and lied down." He was referring to this virulent ditty:

Who would his friends, his country sell,
Do other deeds too base to tell,
Deserves the lowest place in Hell—
Van Buren!

But there is something comical about a song that Earl Carroll, creator of the *Vanities,* wrote for Taft in the 1912 campaign:

Get on the raft with Taft, boys,
Get in the winning boat;
The man worth while, with the big glad smile,
Will get the honest vote.

The prospect of climbing onto a raft with a man of Taft's bulk may have been dismaying to the voters; he carried only Utah and Vermont.

Most of the old campaign lyrics leaned on the recognizable and easily singable melodies of folk music. Politics never did develop its own Tin Pan Alley. Stephen Foster wrote songs for James Buchanan (a winner) and George B. McClellan, but nobody sang them very enthusiastically even then. A popular songsmith named Charles K. Harris wrote one which in 1924 he sold to the Democrats *and* the Republicans; it was either *The John W. Davis March to the White House* or *The Calvin Coolidge, etc.,* depending on your preference. Of course, Irving Berlin wrote the show stopper *I Like Ike,* but he did it for a musical comedy which appeared two years before Eisenhower was even nominated. All the same, it was the only campaign song to catch on nationally since the First World War.

Maybe it is time somebody wrote another, for we need something like that to carry us through the next few months. It will not be enough for the Democrats to keep on playing *Happy Days Are Here Again,* although they surely will. That was a fluke, anyway; it became FDR's trademark in 1932 only because Roosevelt's aide, Louis Howe, got sick of hearing *Anchors Aweigh* during the convention fight in Chicago and told Ed Flynn: "For God's sake, tell 'em to play something else. Tell'em—oh, tell 'em to play *Happy Days Are Here Again.*"

So there are no new songs. It can be argued that in 1972 the various contenders for their parties' nominations—Nixon, Humphrey, McGovern, Wallace, who else?—have names that do not lend themselves to easy rhymes. But that challenge can be met. Who would have thought, in 1844, that anyone could come up with a rhyme for Henry Clay's running mate, the poetically unpromising Theodore Frelinghuysen? To the tune of *Old Dan Tucker,* somebody did:

. . . More power to the clan comprisin'
Henry Clay and Frelinghuysen.
CHORUS:
Hurrah, hurrah, the country's risin'
For Henry Clay and Frelinghuysen. . . .

And so on. Unfortunately, Frelinghuysen was an also-ran. Maybe there is a safer precedent, everything considered, in Woodrow Wilson—who won twice but had no use at all for campaign songs.

Cornell University, Douglas Collection

Theodore Roosevelt never could get away from the Teddy Bear, even on a campaign vase.

This display of campaign artifacts ranges from a Tippecanoe poster of 1840, through a glowering Stephen Douglas statuette to Goldwater's tricky chemical formula and a Humphrey button.

By William Cole

Explorer and wife in the Antarctic

Finn Ronne, last of the do-it-yourself, low-budget explorers, took Mrs. Ronne along for a winter in the South Polar area

Jackie plays with a husky at Stonington Island base of the Ronne Antarctic Research Expedition.

Of the five expeditions that Captain Finn Ronne considers the most significant in his life, four occurred in the Antarctic where he achieved a remarkable record of geographical and scientific discovery. The fifth had a much more friendly locale: Washington, D.C.'s rustic Rock Creek Park, where he met Edith Maslin of Baltimore. "We met at a picnic," Ronne says. "And we've been on a picnic ever since—for 28 years."

Jackie—a name given to her as a child at camp—agrees, though some women might not consider one of her married years, 1947-48, exactly a picnic. That was the year she spent with her husband in the Antarctic—the first American woman ever to step foot on that most desolate place on Earth, and one of the only two who have wintered there. "I wouldn't have missed it for all the gold in Fort Knox," she says. "Nor would I do it again for double the price."

Jackie may not look like a polar explorer, but her husband personifies the role. He glides with a skier's gait across the living room in Bethesda, Maryland, to greet you. At 72, he still has a muscular, compact figure. When the conversation revolves around inflation, politics, the pros and cons of Women's Lib, Ronne is quiet and polite. When questioned about Antarctica, he turns on like a teen-ager at a rock festival. "At the North Pole there is an ocean 10,000 feet deep. At the South Pole there are mountains 10,000 feet high. In the north there are birds, polar bears, musk-oxen, seals, certain types of vegetation and there are Eskimos. In the south there are only whales, seals, penguins and other birds—all deriving their food from the ocean. Man must take everything with him."

He frequently leaps to his feet, unable to contain himself without action. He strides to an adjoining room and returns with the skis that saved his life when he slid over a hidden crevasse. From another trip, he shows the model of the sled he used for months, discovering and mapping new lands. (Ronne has sledged more miles in the Antarctic than any other man.)

Ronne inherited his love of exploration from his father, Martin Ronne, who was with explorer Roald Amundsen on several expeditions, including the race to the South Pole in 1911 against the British expedition of Captain Robert Scott (it arrived a month later).

Trained as an engineer, young Ronne emigrated to the United States in 1923, joined Westinghouse and became an American citizen in 1929, when his father, aged 68, was in Little America with Richard Byrd. Finn's polar career started with Byrd's 1933-35 expe-

dition. He served as ski expert and dog driver and sledged for months in Antarctica's interior. "When I got to Little America," Ronne recalls, "I found my name carved on my father's bunk. Admiral Byrd turned to me and said, 'Your father must have known that you would be the one of his five sons to follow.' "

Finn became obsessed with the dream of leading his own Antarctic expedition. "In large government expeditions, the leader must take orders from people in Washington who may know next to nothing about conditions in the field." His meticulous plans for his own small expedition were taken over by government departments and snowballed into the U.S. Antarctic Service Expedition of 1939-41. As second-in-command under Byrd at East Base on Palmer Peninsula (now Antarctic Peninsula), Ronne led a party of seven men that completed a 1,264-mile dog-sled journey in 84 days, exploring and delineating 450 miles of new continental coastline in the Pacific area.

Commissioned a lieutenant in the U.S. Navy on his triumphant return, Ronne served during World War II, then joined naval surveys in the Canadian Arctic and Greenland to set up weather stations and construct the first airstrip at Thule Air Force Base. Altogether he has made 24 trips to polar regions. His third over-wintering in Antarctica saw the realization of his dream—the Ronne Antarctic Research Expedition of 1946-48, the last private expedition there—and the trip which Jackie shared.

Jackie says she did not have the slightest intention of accompanying her husband of two years "all the way." For months, she had helped him plan. As he solicited funds and equipment and borrowed planes from the Air Force, she did paper work. She took a leave of absence from her job at the State Department and went to Beaumont, Texas, in January 1947 to christen the expedition ship. With a meager $50,000 (a pittance compared to what is expended on government expeditions), and with only 21 men, all working without pay, every hand was needed.

"I just tossed some silk dresses, a pair of slacks, a sweater, nylon stockings and high-heeled shoes into a suitcase and flew down," Jackie says. "First Finn asked me to come along as far as Panama and help with paper work. Then, in Panama, he said why not come along to Valparaiso, Chile, and fly home from there?"

By the time they reached Valparaiso she was hooked. Sending in her resignation to the State Department, she persuaded Mrs. Jennie Darlington, wife of one of Ronne's pilots, to go along on the expedition too. "It wasn't just that I wanted some female companionship," she says. "I didn't want any big deal about my being the first and only woman to go to Antarctica, just because I was the leader's wife." Fortunately, the armed services, for which the expedition was furnishing information, had provided clothing for testing.

By the middle of March, Ronne's 183-foot tug reached Marguerite Bay off Palmer Peninsula. There the resilient wooden ship was frozen in so it could take them home the following year. The party moved to the main base on nearby Stonington Island, which had been built for and occupied by the 1939-41 expedition. The Ronnes occupied a small prefabricated shack connected to the mess hall. "We had an excellent Navy cook," Jackie says. "Most of the men gained weight, but I lost 20 pounds because I couldn't adjust to the monotony of the diet." The mainstay was boneless meat—6,500 pounds of filet mignon. Served five or six times a week, it loses its appeal. "However, we had plenty of canned food and unlimited ice cream, which you crave because of dehydration. You just

A former article and film writer for the government, the author now free-lances for national magazines.

make the mix and set it outside for a few minutes."

To her surprise, Jackie found the climate livable, despite temperatures of —70 degrees F. Humidity is low, weather stimulating and colds and other infectious diseases absent. Jackie, an accomplished skier, accompanied her husband on trips near the base and on some flying and sledding trips. In addition to writing press releases, she helped to keep the daily log and assisted in listing and compiling scientific data. She also filled in on minor scientific operations for men who were ill or on field trips.

It was most difficult during the months of constant darkness. When 23 persons are cooped together for so long, nerves fray and feuds develop. On other expeditions, Ronne recalls, strong men who easily withstood physical hardship, were apt to crack under intense psychological pressure. But with women present, the men kept up some pretense of normality.

"We had some sticky situations," Jackie admits. "We had one distinguished scientist who hoarded all the batteries, for fear the supply would run out. There was some looting of food, candy, cigarettes and other things by the young ex-servicemen who, during the war, had become accustomed to taking what they wanted. But there was nothing really serious. I listened to the men's troubles when they got uptight, and tried to help my husband keep up morale."

Morale was best when the men were busy or when danger threatened. When one physicist fell down a 100-foot crevasse, his partner, unable to extricate him, stumbled nine miles back to camp. Ronne, often irritated by trivia but invariably calm during crises, immediately formed a search party which by some miracle found the right crevasse among the thousands of similar ones in the milky whiteness of the glacier. A doctor was lowered by rope. He found the physicist wedged headfirst at the bottom—still alive after 12 hours. Stagnant warm air had kept him from freezing. A quarter of a century later, the scientist still finds it hard to believe that he is alive and well.

By February 1948, all scientific objectives were accomplished. According to the Congressional Record, "The expedition was the first to ascertain what geographers had called the world's last remaining geographical discovery; that is, whether the Antarctic was one or two continents." Captain Ronne and his men proved definitely that it is one continent. By dog sled, tractor and plane, the party discovered more than a quarter-million square miles of new land and claimed it in the name of the United States. This included a tract of ice and rock 25 times the size of Maryland, which was named "Edith Ronne Land" in honor of the captain's wife by the U.S. Board on Geographical Names. (After 20 years on the map, the name was changed by the Board to the Ronne Ice Shelf.)

Jackie never again saw the land named after her, but her husband did. Promoted to captain in the Naval Reserve in 1953, he served as military and scientific leader for the 39-man unit of the U.S. participation in the International Geophysical Year program, 1956-58. Establishing Ellsworth Station at the head of the Weddell Sea, the party conducted scientific studies, and Ronne extended his discoveries on the Ronne Ice Shelf, finding new mountains and glaciers that were also claimed for the United States.

McMurdo Sound "like the Hilton"

Ronne now lectures on his experiences in the polar region. He has authored two books, *Antarctic Conquest* and *Antarctic Command.* When I met the couple in December 1971, they had just returned from a flying trip to the South Pole where they had participated in ceremonies commemorating the 60th anniversary of its discovery. They stayed at McMurdo Sound, the Navy's main staging area in support of all U.S. research activities in the Antarctic. (SMITHSONIAN, November 1971). "McMurdo is like the Hilton compared to our Stonington hut," said Jackie.

Ronne regards the old-time do-it-yourself expedition with particular nostalgia. "The dog sled is obsolete," he notes sadly. "Now they have airplanes, tractors and snowmobiles, with helicopters leading the way. Today, there are no major geographic objectives remaining; the explorer is no more needed in the polar regions than he is in the United States. He has been replaced by scientific teams which are flown to every conceivable spot in safety."

When Ronne was recently invited to revisit the South Pole in 1986 for the 75th anniversary of its discovery, he accepted. "I'll be 87 years old," he said. "But if I'm still around and kicking—well, sure."

In their suburban home outside Washington, D.C.,
Jackie and Finn are surrounded by Polar mementos.

By Brent C. Brolin

Chandigarh was planned by experts, but something has gone wrong

Acclaimed as the masterpiece of the late—and great—Le Corbusier, its residents are slowly reshaping the city in their image

Cattle wander through shopping centers and lounge in the middle of the streets, even though it is illegal for most residents to own them. Sidewalk vending is outlawed, yet you can't walk on one without stumbling over peanut vendors, shoe repairmen and turban washers. There is an expansive park called Leisure Valley, yet hardly anyone takes his leisure there (right). This is the city of Chandigarh, in northwestern India, and it is a complex phenomenon.

Unlike other Indian cities, Chandigarh did not develop organically over the centuries, but sprang full-grown from the vision of post-independence India and the planning philosophy of the famous French architect Le Corbusier. After the partition of India and the loss of the old Punjab capital of Lahore to Pakistan in 1947, the Indian government decided to build a totally new capital city for the Punjab. In the words of Prime Minister Nehru, it was to be a city "unfettered by the traditions of the past."

The first expert called in was an American architect and planner, Albert Mayer, who prepared a master plan. He chose Mathew Nowicki to be the liaison architect at the site; before his death in a plane crash in 1950, Nowicki had significantly revised Mayer's preliminary plan. Following Nowicki's death the Indians

Leisure Valley, a vast park running through Chandigarh, is virtually unused by the inhabitants.

Brent C. Brolin is the design partner of a firm that uses sociological information to design housing projects suited to the inhabitants' life-style. He took the photographs accompanying this article.

turned to Le Corbusier, who accepted and went to the Punjab in February of 1951. (Two English architects, Maxwell Fry and Jane Drew, were also employed, along with Le Corbusier's cousin, Pierre Jeanneret.)

Chandigarh's evolution was followed with great interest. Le Corbusier was then one of the world's foremost architects and planning theorists, and this was to be his most comprehensive work. Furthermore, he was able to implement his theories without interference, although within reasonable economic limitations. Given all this, Chandigarh came to be looked on as a primer of modern planning and an open laboratory for testing the planners' concepts.

Today, after more than 20 years, the people of Chandigarh appear to be happy. Almost to a man they boast about their closed sewers, flush toilets, hot and cold running water and other conveniences. But then they add: "In the old cities people are closer; in Chandigarh we do not share one another's joys and sorrows."

This confession shows a recurrent malaise that we recently encountered in Chandigarh. If you are given a house with plumbing and electricity, of course you will prefer it to one without them. But beyond the easy observation that all people enjoy the basic amenities, one must ask how well this city meets the subtler human needs. That is, do the planners' ideas about how people should live coincide with the way people really *do* live?

The population of Chandigarh is not typical. Eighty percent of all Indians are villagers, while Chandigarh's residents are primarily educated government workers who, at least superficially, are far more Westernized than most Indians. This was certainly in the minds of the Europeans who designed the city, and it must have made it easier for them to believe that their Western values would be readily accepted.

In the first planning phase a rectangular grid divided the city into 29 sectors one-half mile wide by three-quarters of a mile long. The main business center is near the geographic center of the city, while government buildings (the only ones actually designed by Le Corbusier himself) are located to the north near a man-made lake. Special sectors are devoted to industry and the university, but the typical sector is limited to housing, schools and a shopping center.

Le Corbusier is responsible for this plan, which gives the city its present form. Although the buildings in the commercial and housing areas were designed by his European associates and even by some Indians, these architects had to fit their designs into the overall concepts of Le Corbusier. When a designer comes from the same background as his clients, his needs and likes will probably be similar to theirs. The situation is not so simple when the designer, such as Le Corbusier, comes from a foreign culture.

For example, the perception of space differs considerably from culture to culture. Two Indian businessmen will normally stand about one and a half feet apart while talking, and might even hold hands if they are good friends; Americans in a similar situation would have to be twice as far apart to be comfortable and certainly wouldn't hold hands.

As the designer deals exclusively with the creation of spaces, the cultural difference may create a serious problem. What *he* perceives to be the proper relationship between the living room and the kitchen, for instance, may not be the right one for clients whose

The counters in Chandigarh's efficiency kitchens are often used for storage (opposite) and food is prepared, instead, on the veranda (above).

life-style is "foreign," or in some way different from his.

Most Americans do not want their guests to pass a messy kitchen on their way to a neat living room, as we can see from the majority of house plans in this country. Yet Puerto Rican families in East Harlem need exactly such a room arrangement if things are to run smoothly: The mother has to keep a close watch on who comes and goes, and since she spends most of her time in the kitchen, it must be by the front door.

Modern architects have often said that basic human needs are the same everywhere, but this is a misleading half-truth. Although the need may be the same, the means of satisfying it will differ from culture to culture. Thus, some form of privacy within the home is an almost universal need, but it can be achieved by closing doors, as in most Western cultures, or by closing your ears, as it is in India where openings are only curtained off.

Unfortunately, most architects today (including Indians) are educated in architectural schools that teach Western values, which they then apply in their own countries. The result is often conflict between the people's traditional life-style and their new surroundings.

In Chandigarh spacious living-dining areas, so popular in the West, are consistently cut in two by a curtain. Food is often stored on the counter-top stoves in the kitchens and the cooking done on the floor. Clothes are hung on wall pegs rather than in the closets. Beds are put in living rooms and living rooms made into bedrooms. These misuses remain riddles until one looks beyond the designer's intentions and into the people's way of life.

To do that, let us follow an Indian resident through a normal day in Chandigarh. Our friend's home was one of the first to be built. Its rooms are large compared with those of more recently built government houses; it has a front yard, living-dining room, two good-sized bedrooms, kitchen, bath, rear veranda and rear courtyard. He has a wife and three children, and his grandfather has come to live with them temporarily. He holds a white-collar job in the Secretariat building, and is thus a member of the middle class.

It is one of the colder months, and so the family sleeps inside rather than outdoors, as they do during the summer. The man and his wife and their six-year-old daughter sleep in one bed in the back bedroom; a son, aged nine, sleeps beside them on the floor. The grandfather and the oldest son, 13, sleep together on the large double bed in what was meant to be the living-dining room; besides the bed, it holds a dining table, six chairs and a side table with the family radio.

We can see that the room intended as a second bedroom has become the formal entertaining area, the drawing room. Our friend explains this by saying that when he invites friends to his house, they should not be able to see the family areas: the kitchen, bedrooms, rear veranda, courtyard and bath. These correspond to the areas that, a hundred years ago, would have been restricted to the women of the family. Our friend's guests must still be brought through the dining-sleeping room, but that inconvenience can be borne. Once the guests are in the drawing room, the family can move about discreetly out of their view.

In the majority of the homes we visited, even those of college-educated professionals, the wife would not join the guests in the drawing room until her husband summoned her. This made it imperative for her to have some way of circulating through the family rooms without being seen. A manifestation of the need for separation between these two parts of the house is the curtain that is always hung between the living and dining areas.

An altar in the clothes closet

After bathing, our friend performs his morning *pujah,* or Hindu prayer ritual. The family altar is in a neat corner of the clothes closet, so that it can be kept in solitude between periods of worship. After praying, he closes the closet door and takes his day's change of clothes off the pegs he himself put up.

His wife has been up for some time. She began working on the rear veranda, picking stones out of the uncooked rice and lentils. It is brighter on the veranda than in the kitchen and, like most Indians, she prefers

working in the fresh air. The cooking is done, however, on the kitchen floor over a portable kerosene stove.

The children are just finishing their breakfast on the floor. They like eating there because the *chapatis* (flat wheatcakes served with every meal) are only good when they are hot from the stove. It is a small kitchen, too small to hold the whole family at once, so it is a good thing that the children go off to school early. Unfortunately, in the evening, when they would all like to dine together, they have to eat in shifts. The dining table with its six chairs is seldom used; it is one of those things our friend uses only when he entertains Western guests or other people who he knows would think him "backward" if he invited them to eat on the kitchen floor.

The kitchen counter is not used for cooking as intended, even though the hood would help to carry off the fumes. The wife prefers cooking on the floor. A few "progressive" friends have said that it is unhygienic, but Indian kitchens are scrupulously clean and, anyway, she believes these friends are thinking more about status than hygiene.

After breakfast the wife folds up the bedding and puts it in large metal trunks which take up a fair amount of floor space. They hold all the family's off-season clothing, plus extra bedding. These things are not kept on the built-in shelves provided for them for fear of mice. "Box storage" represents a considerable investment, and so they don't feel safe in putting it on the rear veranda; although loft storage space was provided, it is too high for the women to reach easily. A lockable interior storeroom would have been ideal, but that wasn't planned for.

Our friend leaves home shortly and catches a government bus to travel the two and a half miles to the Secretariat. His wife has packed some lunch for him, but at noon he still goes to one of the unofficial "restaurants" outside the Secretariat for the hot sauces and condiments that accompany a traditional meal. Topping it off with a cup of tea from the *chai khan* or teahouse, also unauthorized, he lounges on the grass and chats with friends before going back to the office.

An illegal bazaar flourishes under a tree across the road from an official shopping center.

In the course of a normal day, our friend has encountered many situations where the designer misinterpreted his needs. The front bedroom of his house is turned into a drawing room because the intended drawing room offers too little privacy for the family. This misuse causes another, the bed in the dining area. No closable niche was provided for the family's altar, so a part of the clothes closet is given over to it, and the clothes are hung on wall pegs. The family is deprived of one part of its highly prized communal life, eating together, because their kitchen is too small.

Looking at this and other houses, we see more inconveniences. The facades often have grilles which cast attractive shadows in the sunlight, but many occupants see them as convenient steps for burglars to climb into the rear courtyard. In this early one-story house it was assumed that the courtyard would be used for warm-weather sleeping; the owners would actually prefer the extra security of sleeping on the roof, but no access was provided.

We often saw paper pasted over living room or bedroom windows that faced onto public areas such as a well-traveled walk or courtyard. The Indian house has always been an intensely private place for the family and a few guests; a window that lets passers-by catch a glimpse into this sanctum is very disagreeable. The openness which Westerners are accustomed to is unacceptable to any but the most thoroughly Westernized Indians, a tiny minority.

After seeing the narrow, winding streets of a traditional city like Amritsar, one is struck by the vast expanses of unused space in Chandigarh. Even though some of these areas are future building sites, there will be a tremendous amount of open space left. Fine, one might say—lots of parks. But there is no Indian tradition of park use. "The parks and clubs are the foreigner's invention" we were told by one political figure. The most frequent park visitors are old pensioners who sit in the sun playing cards and young men who, as single men of marriageable age, are in social limbo. These two groups have always gathered under the sacred pipal tree or at the village well.

Much lower-income housing is arranged around open spaces that are 60 or 70 feet square. Here people sit in front of their houses, sewing, knitting, playing cards and reading, but the action is always on the periphery: They can't make contact across the large central area.

Chandigarh's spaciousness makes it more of a suburb than a city. The "cityness" may come in time, but only if its density increases. Le Corbusier originally thought that the horizontal phase of development would be finished when the population reached 150,000; then the vertical phase would begin, and it is to this phase, one imagines, that he looked forward. Chandigarh would begin to look like the dream cities of his youth, where 80-story apartment blocks housed huge populations that would indeed have filled Chandigarh's parks. But this is still a dream on the sparsely settled Punjab plain.

Bargaining for a book or a banana

Each of the city's sectors is cut into nearly equal halves by a shopping street. These commercial areas were supposed to have one of each kind of shop, so that people could buy their everyday necessities without leaving their own sector. But what has happened is that in many of the sectors the shops are all of the same kind: in one sector mostly hardware and plumbing stores, in another mostly auto and scooter repair establishments, in still another mainly dry-goods stores, and so on. As the head of the sociology department at the Punjab University explained: "Shopping customs are different in our country. People believe in bargaining, so they must have a lot of the same kind of stores in one place."

In the West we walk into a store, pick out what we want and pay the price stamped on the item, but the act of buying is not so simple or impersonal in India. The stated price, whether for a book or a banana or a sari, is seldom the final price if the shopper has his wits about him. What good is it, then, to have only one fruit seller to choose from, one sari shop? It is easier to get a lower price if you can go from one shop to the next and back again. The planned use of the commercial areas is being slowly, unofficially altered in line with traditional Indian bazaars.

The shopping streets were designed with shops on the south side only, to keep pedestrians from crossing the street and getting tangled up with car traffic as well as to keep the shopper in the shade. This sounds reasonable. But people still walk in the streets, and—if you are shopping in winter—the sun can be a very comfortable companion. Furthermore, when you walk or bicycle along the street looking at shop signs, you are always looking south into the glaring sun. But again the natural course of events is easing the situation: In all sectors shops have grown up illegally on the north side of the streets.

Cattle, though virtually forbidden, lounge everywhere in the open streets of Chandigarh.

Dodging cattle on the sidewalks and streets turns out to be as common in Chandigarh as in other Indian cities, even though by statute cattle are supposed to be restricted to a few areas. Every foreigner knows that the cow is sacred in India, but few are aware that it has always been prestigious to own a buffalo. Buffalo are desirable because they give good, rich milk; people want absolutely fresh, high-quality milk and ghee (clarified butter) for cooking. In a country where the adulteration of food is not uncommon, you can only be certain the milk is pure if you see it leave the cow. Buffalo are kept openly in the rear courtyards of small row houses, even though they have to be brought in through the front door in plain view of the neighbors —and, presumably, the authorities.

The original plan was for garbage to be put in cans and collected daily. Actually, it is collected only once a week, but the fact that cattle wander about freely, combined with other Indian habits, makes the situation quite acceptable. Since it is a religious duty to feed the wandering cows, edible garbage (as well as garden trimmings) is left on a pile in front of the house for the cows to browse on. Other waste like paper is saved and sold by the pound to the "paper wallah" who comes round once a week and who, in turn, sells it to the food vendors. We often had peanuts sold to us in some child's day-old English lesson.

Tradition has short-circuited the original concept of Chandigarh in other, less obvious ways. The sector, the building block of the plan, grew out of the idea of the neighborhood unit, which was first introduced into city planning in the late 1920s and has enjoyed continued popularity with planners in the West. It is a self-contained unit surrounded by high-speed roads and focused on an elementary school, placed within walking distance of all the houses, and a small shopping center. It was a practical concept in the West, and particularly in middle-class America where the elementary school (at least until busing) really was a rallying point for the community. This is not the case in India because the schools are not locally run and parents may send their children to any school.

The government-built housing in Chandigarh is arranged according to a strict economic hierarchy and rented to government workers for ten percent of their salary. Those earning the most money live near Le Corbusier's buildings on the north edge of the city. The less you earn, the farther away you live. Consequently, people of similar incomes do live close together, and one might expect this to be a common bond within the community. Yet the sense of family is still so strong that friends are much more likely to come through family connections than through proximity. We were told of a merchant who had had an advertising poster printed showing an attractive young woman holding his product. He proudly showed the poster to his mother, who promptly asked: "Who is this girl's family?"

Except for the illegal bazaars and cattle, there is nothing Indian in the visual quality of Chandigarh; it could be any modern city in the world. Some residents already feel the lack of Indianness. They show it by nostalgia for traditional cities like Amritsar or, sadly, in resignation: "We thought it was horrible when we first came, all like little biscuit boxes and everyone so far apart. But we've got used to it."

Chandigarh is a classic example of what goes wrong when planners apply their own values indiscriminately. They assumed in this case that the architecture would form people in its own image. It hasn't. Where Chandigarh fails to meet the Indians' needs they are fighting to bend it to their accustomed way of life. It is an established fact that we can eradicate other cultures by imposing our own ways. We do not know what the future of Chandigarh will be, but we do know, from the experience of other countries whose cultures have been eroded through contact with the West, that little is gained by abandoning things that connect people with their past while a great deal of pride and cultural self-respect is lost. Perhaps the Indians can make a truly vital, *Indian* city out of Chandigarh—but it can only be at the expense of the original concept.

Illegal open-air "restaurants" thrive outside Le Corbusier's famed Secretariat building.

Some new sights for folk festival

Oyster dredgers, street 'A-rabs' and hunting squires from Maryland will invade the Capital on the Smithsonian Mall, June 30-July 4

Amid the smell of sizzling crabcakes and the cries of "Cowboy Willie," "Petie Rabbit," "Jo-Jo" and other Baltimore street vendors ("A-rabs") with their horse-drawn carts, the Smithsonian Institution will stage its sixth annual Festival of American Folklife in Washington, D.C., from June 30 to July 4. Maryland is the theme, and every feature of the festival springs from the Free State except for a look at Indians of the Southwest and the skills of various labor unions, including carpenters and lithographers.

On the Mall, visitors will learn from the hill folk of western Maryland how to split rails, carve figurines and make shingles. They will see beekeeping and meet blooded horses that may have run in the Preakness or galloped after foxes in the hunt country.

In the Washington Channel, along the shore of Hains Point, will be moored five skipjacks, famed oyster-dredging sloops of the country's last fleet of working sail. Here, too, Chesapeake Bay retrievers will be put through their paces, wood-carvers will fashion detailed duck decoys and traditional Bay boats such as log canoes and bugeyes will be under construction. There will be muskrat trappers, eelpot weavers, net gearers ("gearing" is a bit like macramé) and fyke makers (a fyke is a catfish trap).

To remind us that Maryland is cosmopolitan as well as historic, sounds of the festival will include Greek music, while Greek food and coffee, familiar along the Baltimore waterfront, will bring a hint of the Mediterranean to the nation's Capital.

Fox hunting has been a Maryland sport since Colonial days when George Washington hunted with Maryland friends. Visitors will see Morgans, Appaloosas and many other breeds of horses.

Skipjacks (above) on the Potomac River will show viewers how oysters are dredged on the Chesapeake.

Street vendors of Baltimore will show off their decorated horses and cry their wares on the Mall.

Craftsmen at Kirk's, Baltimore's famed silversmiths, will show how silver is chased and engraved.

Diver feeds a killer whale off the Strait of Juan de Fuca. Free, killers eat warm-blooded sea mammals, including whales twice their size.

By Jacques-Yves Cousteau and Philippe Diolé

Killer whales have fearsome teeth and a strange gentleness to Man

Studying whales, the crew of the research ship Calypso *finds the savage predators love good guitar music and being scratched*

In 1967, in the Indian Ocean, we met a school of killer whales. We were frightened of them—more frightened than we should have been, as it turned out. At that time, nothing was known about their behavior in captivity or semi-captivity; and we, along with the rest of the world, considered killer whales to be the most fearsome creatures of the sea, the avowed enemies of all life-forms to be found in the water, including divers. So far as we were concerned, the killer whale—even when known by the less ominous names of orca and grampus—was the most dangerous animal we could possibly meet. It was more feared even than the shark, for we knew that it was a very intelligent creature. Also, its teeth were most impressive, numerous and enormous in size.

We knew that killer whales were social animals and that they traveled and attacked their prey in groups. So, as soon as we saw this school of them, we concluded that the sea was being subjected to a reign of terror.

Here are journal entries from that period:

April 12, 1967. At 5:30 in the afternoon, a school of small dolphins—a species that we know to be almost unapproachable—is reported. Albert ("Bebert") Falco, Christian Bonnici and René Barsky go out immediately in a Zodiac (an inflatable small boat with an outboard) and chase them until sunset, without being able to catch up. The tricks that these dolphins use are fantastic. First of all, they separate into two groups that swim in different directions. The group that is followed then splits up into two more groups. When the team that is being chased tires, they dive—and are replaced by the other team. When a single dolphin is isolated, it begins by feinting according to a pattern—first to the right, then to the left and back again. As soon as the pursuer becomes accustomed to this rhythm, the dolphin changes it abruptly—by diving or by swimming away in a new direction.

It is likely that this sort of behavior, which is very different from that of our ordinary, friendly dolphins who are always ready to play around *Calypso,* is due to the presence of killer whales in the neighborhood.

April 13. As soon as I awaken my wife Simone, the alert sounds. Everyone rushes up on deck, and a Zodiac is lowered into the water. From *Calypso,* we can see very clearly what is in the water: killer whales. They are easily recognizable by the white markings behind their eyes and on their stomach, and also by their triangular dorsal fin.

There seem to be eight or nine adults and a half-dozen younger whales. *Calypso* is too slow to catch up.

Falco and Bonnici take a Zodiac with a 33-horsepower motor and go out after them, while *Calypso* follows. At nine o'clock, after a hell-for-leather chase at 15 to 20 knots, Bonnici sees a massive black-and-white shape surface right next to the Zodiac. He throws his harmless marking harpoon. Bullseye. The grampus takes off, very fast at first, trailing the red buoy. These mammals are capable of speeds of up to 30 knots (almost 35 miles per hour); but, as streamlined as they are, they are built for pure speed. Even an object of moderate weight, like the buoy, will cut their speed through the water in half.

Captain Cousteau is familiar to millions who follow his undersea adventures on film. M. Diolé has written books on marine archaeology. This book, soon to be published, is translated by J. F. Bernard.

From *The Whale: Mighty Monarch of the Sea.* Copyright © 1972 by Jacques-Yves Cousteau. To be published in July by Doubleday & Company, Inc.

Tall dorsal fins mark a school of killer whales.
When pursued, a group usually splits.

The rest of the school, noticing that one of the members is slowing, also cuts speed for about ten minutes. Then, when the leader decides that they have waited long enough, they disappear in a burst of speed. Bonnici, touched by the predicament of his captive, cuts the harpoon line; and the lightweight harpoon disengages itself from the whale's flesh. The killer whale sets out on the trail of its friends.

April 15. Another alert at eight o'clock this morning, and the Zodiac takes off. It returns shortly. The mammals sighted were more of our very shy dolphins.

A few minutes later, Simone sights a school of blackfish, or pilot whales. We slow down, but the Zodiac is a long time getting into the water. We chase the school, but without success. For some reason, these blackfish, ihstead of letting us come near as they usually do, flee with every sign of fright. This is the first time that we have seen timid blackfish.

A large shark is following *Calypso* close to her stern, but when we slow down it flees.

After lunch, we try once more to catch up with our unapproachable dolphins but, again, in vain. Something is wrong here. Everything that we have seen for the past three days seems terrified of something. We think that this situation has prevailed since our encounter with killer whales on April 12. Is it possible that these animals, usually as rare as they are terrible, are present here in large numbers? By the end of the afternoon, we sight another school of killer whales. The Zodiac is lowered immediately and the chase begins, to continue until nightfall.

The school is composed of an enormous male (at least three tons, 25 to 30 feet long, with a dorsal fin four-and-one-half feet high), a female almost as large as the male but with a smaller fin, seven or eight medium-sized females and six or eight calves. This is a nomadic school, comprising females and young, and with a single male taking the position of lord and master of the group.

At the beginning of the chase, the killer whales are very sure of themselves, diving every three or four minutes and reappearing about a half-mile away. Ordinarily, this would be enough to lose any marine attacker and to shake off a whaler. But the Zodiac is doing 20 knots on a sea of glass and is capable of turning on a dime. A few seconds after the grampuses surface to breathe, they hear the Zodiac's wasplike buzzing coming up from the rear.

After a while, the mammals try a new tactic. They surface every two or three minutes now and increase their speed. But the Zodiac keeps up with them.

The time has come for evasive tactics; the whales dart to the right at 90 degrees, then to the left and back again; then they make simulated turns at 180 degrees. Finally, they play their trump card: The male remains visible, swimming along at 15 or 20 knots and occasionally leaping out of the water. He is accompanied only by the largest female. His purpose, obviously, is to lure the Zodiac into following him—while the rest of the school escapes in the opposite direction.

When the Zodiac is about a mile away from the school, but quite close to the male, the latter dives. Guided by the voices of his companions, he swims straight toward them. From *Calypso,* we are watching all of this. Unlike the men on the Zodiac, we have never lost sight of the main school. And suddenly we see the leader surface in their midst, certain, no doubt, of having done his duty and played a good trick on the pursuer. We are compelled to agree with him.

In one of the chases the Zodiac passed over the back of one of the whales just as it was surfacing. The craft managed to move out of the way just in time, but everyone was thrown to the deck, and the camera, still running, shot up into the air and then fell back into the Zodiac. In spite of the incident and in spite of all the other annoyances that the Zodiac undoubtedly caused, the killer whales did not once take any aggressive action. These animals, certainly ferocious, terribly

powerful and very intelligent and, moreover, armed with a legitimate complaint against the Zodiac, never attacked the frail little boat that was irritating them so. If they had wished, they could have made a single mouthful of Falco, Maurice Leandri and Barsky. They did not.

When the Zodiac returned, Falco told me: "I don't know why, but I had the feeling that they wouldn't do anything."

In the lagoons of Baja California, where we spent three months with gray whales, we saw not a single killer whale. We would have sighted them easily by their large triangular dorsal fins, which project above the surface when they swim. We were surprised at their absence, for they could have wreaked havoc among the gray whales there—as much as a whaling ship. And yet, we did see killer whales lying in ambush just at the entry of the lagoon, at the mouth of the channel. Obviously, they were waiting for the gray whales and their calves to leave the lagoon's protection.

Some divers claimed that a male gray whale was stationed in the channel to keep the killer whales out of the lagoon. It seems more probable, however, that the killers, since they are group animals, are unwilling to risk an encounter in a narrow lagoon, in shallow water, where they would have no place to maneuver. Their superiority over gray whales rests on their skill in group strategy; and that strategy would be seriously hindered in a restricted space blocked by sand banks.

Whatever the killer whale's tactical limitations, the fact remains that it is a formidable adversary. It is capable of diving to great depths and of remaining under water for extended periods. In addition, its vision is much better than that of the baleen whale, because its eyes are larger, and it sees well in the air.

Killer whales are on a par with Man as the great enemy of the large whales. They attack them in groups, isolate one of them and then rush in fearlessly, paying no attention to their prey's tremendous strength or to the danger of a blow from that deadly tail. Some of the killer whales bite their victim in the stomach or the genital area to maintain their hold. Others force open the whale's mouth and seize its tongue. It is a savage and primitive battle in which the killer whales are always the victors. Numbers are on their side, for their victims are unable to group together for a joint defense. Often, the grampuses will choose a whale calf as their victim and then mount a diversionary attack against the mother.

They prey upon many species, and they seem to fear nothing in the sea: giant squid, sea elephants, seals, narwhals or even dolphins—which are able to more than hold their own even against sharks. They prefer warm-blooded victims, and have little taste for fish.

One observer reports that he saw a school of 20 killer whales encircle a group of about 100 dolphins and then gradually begin to close the circle. One whale dove in among the dolphins and killed one of them, while his companions continued to hold the rest within the circle. Then, one by one, the whales each seized one of the prisoners and devoured it. The sea was red with the dolphins' blood.

And yet, today we are certain of one thing: There is no cetacean man-eater. Even the killer whale, whose ferocity and power is legendary, does not attack divers. Moreover, we know now that killer whales are marvelously receptive to training.

I am always touched and saddened by the sight of an animal in captivity, especially when it is a marine animal as powerful and intelligent as the killer whale. I must admit, however, that observation of cetaceans in our great marine zoos is the only way that we have of learning about their behavior and of establishing familiar relations with them.

The first killer whale to be exhibited in captivity was named Moby Doll and was at home in the aquarium of Vancouver, British Columbia. A Canadian sculptor had been commissioned, in 1964, to execute a

replica of a killer whale; and, in order to have a model, he intended to kill a specimen. After two months of trying, he succeeded in harpooning a whale; but, when the moment came for the coup de grace, the artist could not bring himself to do it. Instead, he brought his victim to the aquarium, nursed her back to health with penicillin, gave her the name of Moby Doll and, to everyone's astonishment, won the whale's friendship. This was in 1964, when the killer whale was still regarded as the most savage of marine animals, the "tiger of the sea."

Moby Doll became a celebrity. The Duke and Duchess of Windsor came to see her and to watch her savior and friend scratch her stomach with a stiff-bristled brush. When Moby Doll died, *The Times* of London devoted two columns to her obituary, and she was mourned throughout the English-speaking world. When an autopsy was performed upon Moby Doll, it was discovered that "she" was a full-fledged male.

A few months after Moby Doll's death, the Seattle Public Aquarium purchased a killer whale from two Canadian fishermen for $8,000. Delivery, however, was not included in the purchase price, and Edward Griffin, director of the aquarium, went to the mouth of the Bella Coola River, near the village of Namu in British Columbia, to supervise the operation. His whale, he found, was 24 feet long and weighed about four tons. He decided to encircle the whale with a floating net and to tow him back to Seattle. Using 41 empty oil barrels as floaters, and with the help of 200 volunteers from the village of Namu, the net was completed and in place in a few days. And, in recognition of the help given by the villagers, the whale was christened Namu.

A ship now began towing the net and its resident slowly along Queen Charlotte Strait, Johnstone Strait and the Strait of Georgia. As the net moved, it was followed by a school of killer whales. It appeared that they wanted to free their companion; but they did not attack. Only one male and two females, who were no doubt members of his family, communicated with him by means of a series of whistles and cries. In response, Namu moved his dorsal fin; but did not try to escape.

Three weeks later, the whale passed through customs at the American border and was placed in a tank at the Seattle Aquarium. There he was treated royally. While he was being moved, he had refused to eat for about a week. At the end of that time, however, he accepted two salmon. He seemed to enjoy them enormously, for he would never touch any other kind of food so long as he remained in Seattle—an unexpected idiosyncrasy that proved expensive for the aquarium.

From the Smithsonian Museum Shops
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The potter for Old Salem, Rick Flannery, will demonstrate at his potter's wheel, Rotunda Museum Shop, History and Technology Building, June 22, 23, 24, 25, 11:00 a.m. until 2:00 p.m. Original pottery on which reproductions are based will also be on display.

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SMITHSONIAN MUSEUM SHOPS
The Smithsonian Institution, Washington, D.C. 20560

Louis Prézelin plays his guitar for Serge Foulon and an obviously fascinated killer whale.

Namu died after a year, in July 1966. He, like Moby Doll, had evidenced much intelligence and a surprising gentleness.

During the past few years, numerous killer whales have been captured and put in marine parks in Seattle, San Diego and Vancouver. Edward Griffin, aided by a friend, Gerald Brown, has become a specialist in the techniques of capture. Mr. Brown has spent some time aboard *Calypso* as a diver and a specialist in marine life. He has had much experience with killer whales, and he has this to say about them: "They are really something to see in the water. They make up underwater ballets, twisting, rising up from the bottom, jumping. When they were first captured, they were restless and skittish; but when I put my hand out and petted them, and told them that they were beautiful animals, they calmed down. Domestication is not a question of food, but of contact."

A killer whale can be trained and become attached to man without receiving food from the human being. In fact, the most difficult thing about keeping a whale in captivity is getting it to eat. Killer whales do not really care for fish, Namu being an exception to the rule. They prefer the flesh of warm-blooded animals—but the aquarium cannot feed them its seals.

The first whales captured were traumatized, and it

Why should anyone want to vacation in New Mexico and run the risk of getting lost?

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was necessary to allow them to adjust to their tank. The keepers brought this about by going down into the water, waist-deep, and "walking" the whales, pushing them gently. Left to themselves, they would not budge. In this way, they familiarized them with the walls of their tank. Then, little by little, the whales began to move around by themselves. But they still would not eat.

The keepers began by offering them a sort of paté made of herring, milk and vitamins, which they refused. The keepers then propped the whales' mouths open with pieces of wood and tried to place the mixture down their throats; but the animals held their tongues across their mouths and would not allow the food to enter. Finally, the keepers tried holding the tongues out of the way and force-feeding the whales through a tube inserted into their mouths; but this didn't work either.

Now the keepers sat down and thought. They knew that killer whales did not eat whole fish. What if they cut one in two and tried to feed a single piece to a whale? This gave them a better idea.

"We were sure," explained Brown, "that if we could get one of them to eat, the others would follow suit. When a whale bites, its teeth make noise in the water. And as soon as another killer whale hears that noise, it rushes over to eat whatever is left. We experimented first with a young whale. We rubbed a herring against its lips, and then we put it into its mouth and began pulling it out immediately. It reacted exactly as a dog would react: As soon as it saw that we were pulling the herring out, it bit on it and held it. We pulled harder, and it bit down very hard. The other whales heard the 'crunch,' and they came right over and began eating."

The killer whale family is a closely knit unit. Usually, there is only one calf at a time, and the offspring is enveloped in a maternal love that seems highly developed. When a mother whale has reason to be afraid for her young, she comes close and "speaks" to it. A mother who was mortally wounded spent her last hour, and her last ounce of strength, circling around her calf in order to protect it as long as possible. Another mother wandered for three days off Hat Island, near Puget Sound, after her calf was killed there.

There have been several instances of mating in captivity, at Seattle and Vancouver. The whales copulate, after extended caresses, in a frontal position, chest to chest. The gestation period lasts from 13 to 16 months.

The sexual life of killer whales seems particularly intense and includes a powerful attraction to human beings. And they are perfectly capable of distinguishing between human male and female. Our friend Jerry Brown discovered this in the whale tank at Seattle. He told us about it.

"We had a female whale in a tank there for about a year, teaching her the usual tricks. One day, when the water was especially clear, I went down to take some underwater pictures. As soon as I was in the water, this female—Shamoo was her name—came over to me, pushed me up against the tank wall and began rubbing against me. I called to a friend of mine to throw some herring into the water at the other end of the tank, but this didn't work. Shamoo wouldn't let me go, and I stayed there, pinned against the wall, for an hour and a half."

The skin of killer whales is especially soft and smooth. When they are swimming in groups, they remain constantly in physical contact by sliding against one another. This may well be a form of sex play.

A final and important characteristic: According to everyone who has worked with both killer whales and dolphins—including experts from the U.S. Navy—the whale is more intelligent than the dolphin. They un-

Seizing a fin, one of Cousteau's divers gets a ride, this time on a finback whale. These men have learned how to straddle and ride one like a horse.

derstand and learn faster than their smaller cousins.

A team from *Calypso,* made up of Ron Church, André Laban and Louis Prézelin, went recently to visit Griffin's and Brown's killer whales. The dean of all captive killer whales lives with them, and it is now in its fifth year of residence.

Prézelin had brought his guitar and played a few tunes while standing alongside the whales' tank. The animals immediately came over to the side closest to Prézelin and listened attentively and then showed their satisfaction at the man's performance by spraying him from their blowholes.

Our team next tried to teach the whales to sing, with Prézelin accompanying on the guitar. This was less than successful, but there is no denying that killer whales are sensitive to music and that one can get their attention, and their appreciation, if one is sufficiently fastidious in the choice of melodies.

Bebert Falco, after having chased so many killer whales over the water in his Zodiac, hoped to be able to establish more peaceful relations with them. Accordingly, he went to visit two females placed at the Marineland of the Pacific. Both were obviously very sensitive to the sounds coming from a loudspeaker over their tank. These sounds were the dialogue that had taken place between them and the other members of their school when they were captured. This exchange of clicks and trills quite obviously moved the captives. They swam quickly around their tank, but always returned immediately to a spot near the loudspeaker and replied to it.

Falco swam for a while with a female killer whale named (for some obscure reason) Clyde, and he took the opportunity to try a few experiments. For example, he held out a fish to her but, when she came to take it, he placed a thin plank between the whale and her food. The whale immediately turned away—apparently warned by her sonar of an obstacle.

The language of killer whales, like that of dolphins, remains incomprehensible to us, despite the best efforts of researchers. At least we now know that these cetaceans do have a language of some kind and that we must attempt to discover the meaning of the sounds that they make. This, perhaps, is one of the most exciting challenges that we have to face. It is not impossible that the killer whale, more intelligent than the dolphin, will one day provide us with the means of establishing communications between animals and Man.

Short-lived phenomena

Toxified geniuses, good news from Down Under, concrete boats and a long-lived phenomenon

Anyone who has become addicted to "collecting" unusual events and out-of-the-way facts may gorge himself on the 1971 Annual Report just released by the Smithsonian's Center for Short-lived Phenomena (60 Garden Street, Cambridge, Massachusetts 02138: $5 per copy). While not light reading, its 322 pages detailing the year's quakes, fissures, eruptions and other disasters large and small will at least shake from their contented illusions any souls who still believe that planet Earth is terra firma.

For example, have you ever heard of a *jökulhlaut*? It is a glacial outburst flood, usually caused when a volcano erupts under an icecap and, instead of penetrating the icecap, melts a large volume of water. Early this spring, the Center received a report that a *jökulhlaut* was in process in Iceland, though not an especially bad one. In one area, they occur about every five years, and, according to Dr. Jules Friedman of the U.S. Geological Survey, sometimes produce "as much runoff as the Amazon River yields in the course of a few days." The reason Icelandic scientists are particularly interested in the *jökulhlaut* this spring is that it occurred in an area where a road has been planned.

No one should think the Smithsonian is fixated only on the evanescent, however. On the last day of May, Dr. Charles Abbot (SMITHSONIAN, October 1970), astrophysicist, former secretary of the Smithsonian and certainly one of the Institution's most revered and *long*-lived phenomena, quietly celebrated his 100th birthday. The month before, he had received patent number 3,654,659 (covering his design for a device that would convert solar energy into power) thus becoming the oldest inventor ever to receive a U.S. patent. Dr. Abbot reports that when he builds the device it will include additional improvements on which another patent is now pending.

Ferro-cement for fishermen

Before its violent political upheavals, the unhappy land of Bangladesh had been struck by the worst natural catastrophe of the century. The tidal wave and cyclone that roared up the Bay of Bengal in November 1970 not only took some 300,000 lives and nearly as many homes, but it also destroyed 9,000 fishing boats, virtually eliminating a vital source of livelihood for the survivors.

Bangladesh does not have the capital, craftsmen or wood to replace the decimated fleet quickly. One answer might be to make boats from ferro-cement.

"Why not?" asked the National Academy of Sciences' Dr. Noel D. Vietmeyer recently. Vietmeyer is an investigator of unexpected technologies and overlooked products such as the "superbean" (see SMITHSONIAN, April 1972) and has long been enthusiastic about concrete boats.

With sand, cement, chicken wire and metal reinforcing rods, a few relatively unskilled laborers can rapidly turn out a ferro-cement hull that can be less expensive, stronger and longer-lasting than a wooden one. With United Nations and American help, concrete fishing boats have already been built and used in a host of developing countries from Africa to Asia. Also, Vietmeyer reports that in one Chinese commune near Shanghai, women laborers churn out ferro-cement boats at a rate of one a day (see photograph below).

"Before any final decision is made, we have to analyze local materials and boat designs in Bangladesh," says the catalytic Vietmeyer. "Do they have the right kind of cement, the right wire mesh? If so, all you need is a few trained supervisors. . . ."

The first farmers

The greatest revolution in human affairs, the invention of agriculture, originated twice—in the Middle East 10,000 years ago and in Central America many millennia later—right?

Wrong, according to Dr. Wilhelm G. Solheim, II of the University of Hawaii. The domestication of plants and animals also began independently in Southeast Asia, perhaps as long as 15,000 years ago. Writing in *Scientific American,* Dr. Solheim reports that in Spirit Cave on the Thailand-Burma border, archaeologists have found as many as ten apparently cultivated plants and the remains of domestic pigs in levels dated back to 10,000 B.C.

Solheim suggests that "at some point, probably about 13,000 B.C. somewhere in

In a Chinese commune near Shanghai, women complete the wire mesh structure for a concrete sampan hull. They produce one hull a day.

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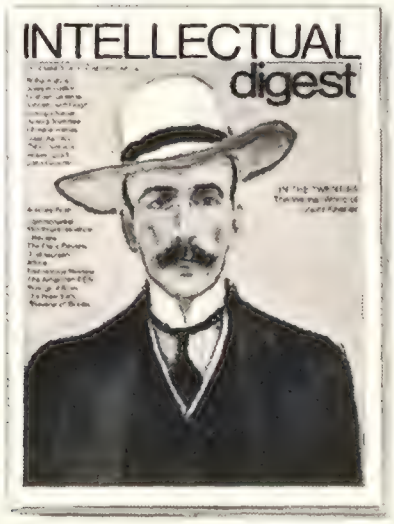

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Nature's Past: Florida's West Coast, from Sanibel Island to the flood plain valley of the Myakka River—November 12-19.

(See Foreign Tours, page 82)

the northern reaches of Southeast Asia," mountain tribes were tinkering with wild plants and came upon the practice of horticulture. If he is right, by the time Neolithic men (or more likely women) in the Middle East had managed this first step, a host of plants as well as pigs, chickens and maybe dogs had already fallen under the control of the Asians.

Toxified genius

For some time there has been speculation that the dark visions of the Spanish painter Goya's later life were the result of lead poisoning from heavily leaded paint. Now J. R. M. Seitz of Harvard and Jerome Y. Lettvin of M.I.T. have fingered a heavy metallic culprit in the misfortunes of another genius, Sir Isaac Newton.

Newton's prodigious scientific productivity began to decline at age 45 and within a few years he retired from science. Among his symptoms: palsy and paranoia. At last December's meeting of the American Physical Society, Seitz and Lettvin pointed out that Newton used great quantities of mercury in his *Optics* experiments, and they suggest that Newton had a severe case of mercury poisoning.

About a century and a half later, the ever-ailing Charles Darwin betook himself to the country complaining of extreme ill-health and despondency. Guilt feelings, suggest psychiatrists with their customary affinity for the median. Arsenic, says a California professor, John H. Winslow in a monograph, *Darwin's Victorian Malady*. Darwin had been using arsenic since his youth to cure eczema, and he apparently had arsenic poisoning.

Unendangered species

Long ago Australian farmers determined that kangaroos were overly plentiful pests and undertook ruthless eradication programs. These gave rise to alarm over such treatment of this Australian symbol, which led to a kangaroo survey under the direction of a parliamentarian, a Mr. M. Fox. According to the *Christian Science Monitor,* Mr. Fox discovered that despite the Aussies' best efforts, there are more kangaroos now than when the first white men arrived.

Furthermore, for those who root for the beasts and can use any scrap of good news, Australia's shy duck-billed platypus is reportedly doing fine.

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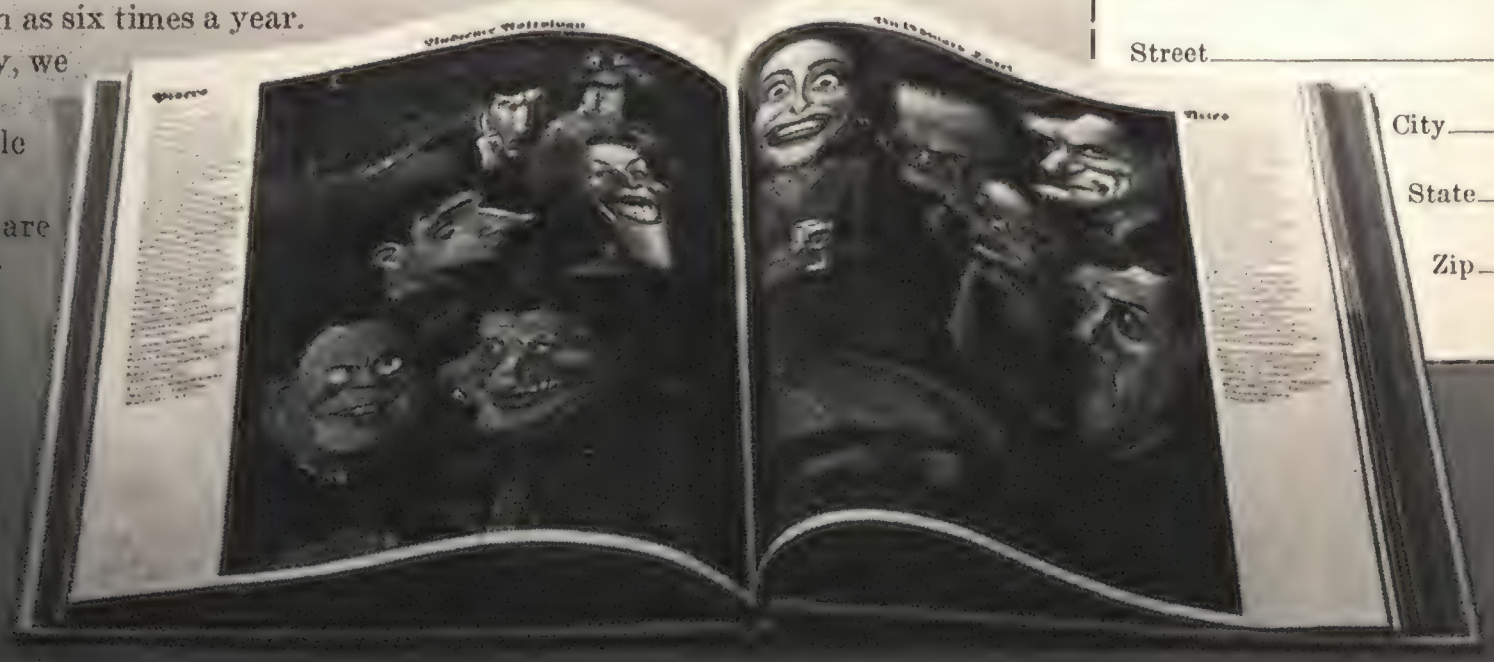

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Book reviews

Going to America
Terry Coleman
(Pantheon, $8.95)

Here is a book to turn men's stomachs—the story of immigrants, mostly Irish, who came to North America from England and Ireland between 1846 and 1855. More than 2,300,000 emigrated from Britain in these ten years, the greatest exodus from the old country to America to that date. They came from little to nothing.

It is not the happy history of Andrew Carnegie and his ilk. For every Carnegie there were hundreds who died crossing the Atlantic or in quarantine after arrival, or who lived on in destitution once they got here. It is a document of victimization, of appalling poverty, greed, neglect and human waste. Statistics in this book say much: "17,465 emigrants to British North America died in 1847, or one in six of all who sailed." A monument on Grosse Isle near Quebec records that 5,424 emigrants are buried there.

Going to America tells of particular people. Terry Coleman records their journals, their letters, their testimony before Congressional and Parliamentary committees, as well as documents, newspapers and magazines of the day. Some of his best sources are the papers of men not emigrants: Nathaniel Hawthorne, U.S. Consul at Liverpool 1853-57; Lord Grey, British Colonial Secretary; Herman Melville, who knew the emigrant trade; Charles Dickens and Frances Trollope; Edward Everett Hale, Samuel Morse, Horace Greeley and the French poet-politician, Lamartine.

Through 15 chapters Coleman traces the emigrants' progress from the Irish landlords who sent them packing ("shovelling out" was the word), to the "runners" who swindled them from Liverpool to New York to the quarantine stations in Quebec and on Staten Island. Everywhere they were cheated, deceived and allowed to die. Nor were they protected by the Passenger Acts of either Britain or America—well-intentioned but unenforceable.

Perhaps the book's only real hero is "progress." By 1855 the steamship had cut the voyage in half and so doubled the emigrant's chance to arrive. Also the opening of Castle Garden immigrant depot in 1855 meant that emigrants to New York were for the first time protected from welcoming hoodlums.

—Nancy Poland
Former AP reporter, now free-lancing

Habit and Habitat
Robert Theobald
(Prentice-Hall, $8.95)

Robert Theobald is a British socioeconomist who was born in India and lives in Arizona when he is not stumping the country in cowboy boots hawking his own dynamic brand of cure-all. Best known perhaps for his concept of the guaranteed income, his books include *The Rich and the Poor, An Alternative Future for America, The Economics of Abundance* and now *Habit and Habitat.*

The environmental movement, he feels, while recognizing our failure to take responsibility for the world we live in, has itself failed to deal with anything but symptoms of the crisis. Overpopulation, abuse of technology, runaway consumption, are not its causes. These lie far deeper: "The habits we have developed during the industrial era towards our habitat are now so inappropriate that only a fundamental change in thought and action patterns will make any real difference to man's future."

Theobald grants that it is almost impossible to define the new style of thinking he feels is developing. It implies perception of "connections, interdependencies, and reciprocal relationships."

The book is in two parts. The first part makes the case convincingly, if repetitively, for a fundamental change in Man's attitudes and assumptions if we are to stay human; a change from "linear" to what he calls "systematic" thinking. Theobald exposes today's economics as the most linear of all the social sciences: "Why did economists decide to examine *means* to achieve economic growth without considering the *consequences* of a drive for maximum economic growth on social and ecological patterns?"

He cites the example of businessmen who are coming to understand their fundamental responsibility for the quality of life in the communities in which they produce and sell, but generally remain unaware of how their constant pressures to increase consumption undermine their efforts to improve the human condition.

Part Two is largely an effort to teach the reader to think systematically. There are a couple of chapters of unusual visual aids thrown in for those who are used to less "structured" learning.

Theobald sets his premise against a backdrop of three schools of thought. The "extrapolists" assume no fundamental break between the past and the foreseeable future, a view popularized in Alvin Toffler's *Future Shock.* To them the future is an extension of present trends. The "creatists," on the other hand, believe that a new culture can be created without influence from the industrial era, that the past does not have to influence the future. The success of *The Greening of America* shows the swing towards this view.

"Systematic thinking," however, calls for "a fundamental shift in our perspective." This shift occurs when "the desire to describe the dying industrial era gives way to the discovery of the new shoots of the future which are already with us but largely invisible." ("To perceive possibilities is far more demanding than to examine problems.") We must create the dreams which will move people to change present trends in directions which will permit Man's survival.

—Henry Pelham Burn
Environmentalist writer and editor

Passions and Politics
Joseph Barry
(Doubleday, $12.95)

Of all Man's earthly creations, none illuminates Thorstein Veblen's theory of "conspicuous waste" more obviously than the palace and grounds built for the 17th-century court of Louis XIV adjacent to the French village of Versailles. The spectacle of Versailles, on a spring day when the fountains are going, is still a total

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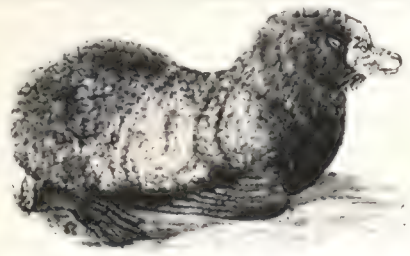

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assault on the senses, just as it was when the novelist Mademoiselle de Scudéry described a "Palace of the Sun, everywhere illuminated, its windows filled with what seemed the most beautiful statues of antiquity, alight with color. . . ."

Writing a biography of a physical place which has such a special importance in modern European history is an ambitious undertaking. All Europe revolved around the court of Louis XIV—and around Versailles for a long time afterward. Here Louis XVI stalled and temporized but finally signed the Declaration of the Rights of Man, which cost him and Marie Antoinette their heads. Here, after the Franco-Prussian War of 1870-71, the German Empire was proclaimed; here, in the Hall of Mirrors, that empire was dismantled by the Treaty of Versailles nearly 50 years later.

Not surprisingly, the dominating figure of Mr. Barry's book is the Sun King himself, Louis XIV, who put his name and his personal stamp on the whole 17th century. Not until he died, in 1715, did the 18th century truly begin.

On balance, Louis not only had "style" and a creative intellect but was rather effective. He governed as well as reigned, and he *worked*. With his famous "gardener," André Le Nôtre, he would put on boots to tramp over the Versailles construction site. He would borrow shears to trim a bush as the raw natural beauty rolled in by ox-drawn wagon from all over: 6,000 elms from Flanders, 4,040,000 feet of hornbeam from Normandy, evergreens from the northern Vosges, oaks from southern Dauphinè.

The cast of characters at Versailles, particularly after the Sun King moved his court there in 1682, is simply stupefying. Everyone who was anyone in French history turns up in Mr. Barry's book: Molière, Racine and Corneille in drama; La Rochefoucauld; Voltaire, Diderot and Sieyès in the pamphleteering art which the post-Louis XIV *philosophes* practically invented; Mazarin, Turgot, Colbert and Richelieu in statecraft; and, of course, mistresses beyond counting. (The Sun King seems to have preferred skinny ones like La Vallière.)

It was an expensive place to run—too expensive. Louis temporarily created a treasury surplus by the modern trick of cutting taxes to increase total revenues, but there was not enough money for Versailles and wars too. In 17th-century wars, the Sun King usually came out looking like the winner; but he never quite delivered the knockout punch.

Perhaps the Sun King should have worried more about his succession. ("Why should I care who succeeds me? Are they not all equally my grandsons?") Louis XV continued to dazzle Europe with his fetes, but he kept the licentiousness of his great-grandfather's court without keeping the style. He did create small bachelor-type *petits appartements* for his mistresses, who were reached by a private passageway still called the Staircase of the Dogs. Bored by Madame de Pompadour, he also set up his own sporting palace in the Parc aux Cerfs.

But the quality of the court declined. If Louis XVI's court had a hero, it was Benjamin Franklin, who arrived in 1776 with the illegitimate son of his illegitimate son, a gesture calculated to endear Franklin's "republican simplicity" to Versailles right there. The American Revolution gave the French a chance to strike a humiliating blow at France's old enemy, England, but the cost was disastrous. Franklin himself borrowed extensively to pay for purchases in Europe; the money was repaid but not, as Mr. Barry notes, until well after the French Revolution which such expenditures had helped bring about.

Passions and Politics does have structural faults, particularly of a digressive nature; but even the digressions are fascinating in their detail. Mr. Barry does counsel us, "The greatness of Versailles was in its creation." The same might be said of his book; few writers would have dared tackle the subject at all.

—*Gene Farmer*
Historical writer and editor

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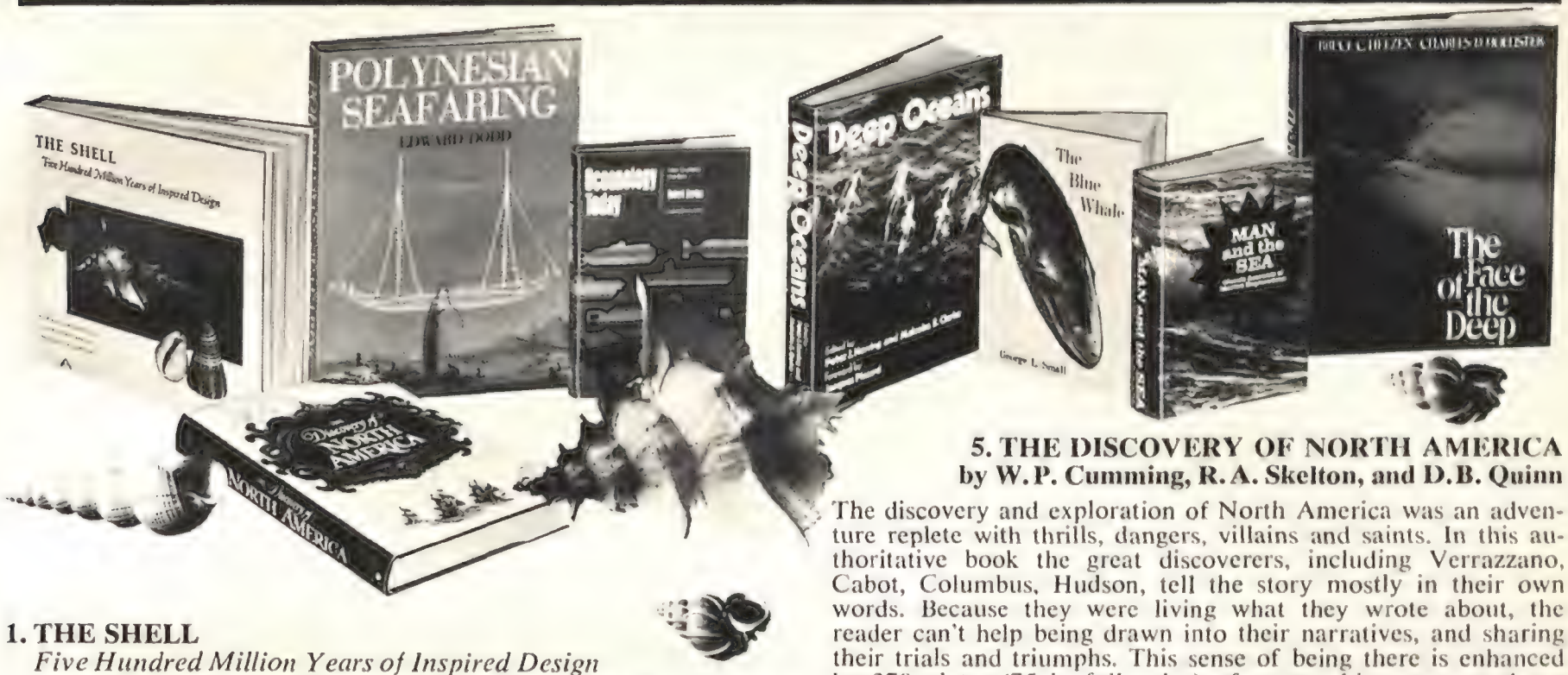

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Sites of Civilization: Three weeks on the cruise ship *Argonaut* from Athens to Rome, via Thera, Crete, Egypt, Carthage, Malta and Sicily—September 15-October 6, 1973.

African Safari: Tanzania and Kenya game parks, plus the Seychelles in the Indian Ocean—October 25-November 16, 1973.

Smithsonian highlights

Traveling Exhibition Service

There are up to 70 different Smithsonian-sponsored exhibitions on display each month throughout the United States and Canada. For a complete listing and information on how to bring an exhibit to your area write: Traveling Exhibition Service, Smithsonian Institution, Washington, D.C. 20560.

- Fort Wayne, Indiana—"The Art of the Comic Strip" (Fort Wayne Museum of Art, June 3-July 2).
- Ardmore, Oklahoma — "International Prints" (Goddard Center for the Visual and Performing Arts, May 27-June 25).
- Mobile, Alabama—"The Story of a Goblet" (Mobile Public Library, June 10-July 9).
- Indianapolis, Indiana—"Movie Palace Modern" (Indianapolis Museum of Art, June 17-July 16).
- Green Bay, Wisconsin—"A Children's World" (Neville Public Museum, June 17-July 16).
- Wichita, Kansas — "The Frederick Douglass Years" (The Wichita Art Museum, June 17-July 16).
- Dallas, Texas—"Tibetan Carpets" (Dallas Public Library, May 27-June 25).
- Albany, New York—"Portraits by Belgian Children" (The Art Gallery, University of New York, June 3-August 20).
- Edmonton, Alberta, Canada—"Vanishing Totem Poles of Alaska" (Provincial Museum & Archives, June 17-July 16).
- Charleston, South Carolina — "Religious Themes by Old Masters" (Archives-Museum, The Citadel, May 27-June 18).
- Rochester, New York — "Computer Technology (Rochester Museum & Science Center, May 6-July 30).

Summer hours now in effect at the Smithsonian Institution are: 10 A.M. to 9 P.M. for A & I, MNH and MHT. Hours for the other buildings remain the usual 10 A.M. to 5:30 P.M.

Arts and Industries Building

"Drugs" is a general perspective of all aspects of drug use in our society. The show will include films, lectures, panel discussions and theater.

"World War I Fighters," a habitat exhibit, shows a front-line forward airstrip in a reenactment of the capture of a *Fokker D-VII. Also included are memora*bilia of the period with uniforms, medals and a commemorative exhibit on the Lafayette Escadrille.

"Balloons" tells the total story of ballooning from its invention to its future possibilities—showing forms, fabrics and functions (see May SMITHSONIAN).

Museum of Natural History

"Insect Zoo" features a wide variety of living insects (including a termite colony, beehive, ant mound) and uses audio-visual aids to show some of the remarkable biological features of common and rare insects. All aspects of an insect's life history will be illustrated when possible, such as mimicry and metamorphosis.

Museum of History and Technology

"Beekeeping" is an observational glass beehive from which the bees can leave through a hole in the wall to gather pollen around downtown Washington and return to hive life each day.

Freer Gallery of Art

"2,500 Years of Persian Art" celebrates the anniversary of the founding of the Persian Empire, with an exhibit of jewelry, ceramics, miniatures and examples of calligraphy and illumination (see April SMITHSONIAN).

National Portrait Gallery

"If Elected . . ." focuses on portraits and campaign memorabilia of men and women who ran for the Presidency and were defeated (see pp. 44-51).

Renwick Gallery

"Design Is . . ." includes such diverse objects as a heart pacemaker and a modern fireplug to show elements of design.

"The Swedish Touch," contemporary Swedish textiles, opens June 10 with a display of tapestries, wall hangings, patchwork, fabric collage, stitchery.

National Collection of Fine Arts
"Washington Print Club Collection" is a selection of works from the private collections of members.

"National Parks and the American Landscape: An Approach to Nature in the 19th Century" will open June 23. It is an exhibit of artwork, photographs and memorabilia commemorating the centennial of our national park system.

Division of Performing Arts
"Festival of American Folklife 1972" (see pp. 64-65) will be held on the Mall from June 30 to July 4. Featured this year will be the state of Maryland, Indian participants representing tribes from New Mexico and Arizona, and the American working man as a member of organized labor. Continuous craft demonstrations, workshops and Indian panel discussions in all three areas will be held from 11 A.M. to 5 P.M., with informal concerts scheduled into the early evening.

"Land of Oz," written especially for the Smithsonian Puppet Theater, is performed twice daily, Wednesday through Friday, and three times daily on weekends. Call (202) 381-5395.

Coming Events
"Teaching Teachers: City Building" is a pilot model-city building project to help young people become aware of the environment and the possibilities for effecting changes. Ten grants are available for teachers to work with the project and in seminars to learn how to create similar projects for their own schools. July-August at the Smithsonian. Send resumé and letter application to Mrs. Susan Hamilton, Room 1208 A&I, Smithsonian Institution, Washington, D.C. 20560, or call (202) 381-5157.

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By Patrick Ryan

Over the years, Kilroy was there with graffiti

Cleaning graffiti off New York City's subway walls costs the Transit Authority more than $500,000 a year. A spokesman reports that "every station porter spends an hour a day on it." From the way the productivity of surreptitious scrawlers keeps rising, the day may come when a duplicate staff of porters will be needed solely for expurgatory duties.

Boston also has the problem. Its city fathers tried channeling the urge to desecrate by providing a Scribbleboard like the Klotterplank of Stockholm on which Swedes record their beefs. Boston found that its public scribes still preferred the wide-open spaces of anybody's wall. In Philadelphia, so much more than brotherly love is being delineated that the city spends some $200,000 a year in attempts to curb inscriptions. A special squad of 25 policemen wages Philadelphia's anti-graffiti campaign.

Benevolent science has provided urban self-expressionists with the swift facility of the aerosol paint can and the indelible boon of the felt-tipped pen. With the aerosol, mighty messages, which once took half the night with a pot of paint and a brush, can now be sprayed on at walking pace—thus combining calligraphy and quick getaway. For more intimate announcements the felt tip has a clarity of imprint far beyond that of ball-point pen, chalk or lipstick.

Science has developed a few new defenses such as DWR (Dirty Word Remover) which costs $13.50 a gallon in New York. But history cannot offer defenders of the virgin wall much prospect of ultimate victory. At least since Lascaux, the human race has been concerned with leaving its mark upon everything from caves to toilets. The Greek mercenaries of the sixth century B.C. who scratched their names and the prevailing equivalent of ΚΙΛΡΟΙ ΗΝ ΕΝΘΑΔΕ on the legs of the colossuses at Abu Simbel have unbroken descent to the visiting men-at-arms of the 20th century A.D., who have embellished the monuments of Europe with eponymous mementos.

Pompeii's Arphocras, who recorded for posterity that thereabouts he "pleasured himself with Drauca for a denarius"—which was about a penny—might be comforted in his lava-bound grave to know that proclamations of similar, but doubtless more expensive conquests, are written along today's subway corridors. And the early Christians who marked Roman walls with the symbol of the fish—*ichthys* in Greek, an acronym in that language for "Jesus Christ, Son of God, Savior"—as a secret advertisement of their faith may now look down in approbation on the more direct dedications currently being scribbled by proselytizers of the Jesus-people revival.

There seem to be two broad psychological types of graffiti—one, the memorial; the other, the release. The first, stemming perhaps from the ego, appears in public places in a bid for immortality. I was here, it announces, and, though I must die, I leave my mark behind. The second, which arises more murkily out of the id, is a private unleashing of frustrations, and thus finds expression principally in the privy. Within such secret compartments, obscenities can be safely inscribed. The availability of lavatory walls must have saved myriads from the bankrupting confines of the psychiatrist's couch.

Yet some of the *plein air* wall writings have almost driven me to the head-shrinker. Through reading on a departure lounge partition the scarlet question, "IS THERE LIFE BEFORE DEATH?" I once missed a plane at a London airport. Takeoff time passed while I pondered which of the two states I might be currently inhabiting and, if the latter, whether it was worthwhile making the projected journey at all. I have not blithely cashed a check since I confronted on a sidewall of Westminster Abbey the felt-tipped assurance that "GOD DON'T PAY HIS DEBTS IN MONEY." I have never been certain what it means since I cannot recall lending any divinity anything; but its mere repetition sends a small gray wind freezing across my neck.

"In a real dark night of the soul," mourned F. Scott Fitzgerald, "it is always three o'clock in the morning," and it certainly was in mine when I stepped out of a Thames-side pub onto a mist-haunted road and met the white warning on a black fence, "DON'T LOOK BACK, THE LEMMINGS ARE GAINING ON YOU." Foolishly, I did look back. And there they were all right, overtaking me at a fair scurry, every rainbow-colored, polka-dotted one of them.

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